

P. 1. 2465
The LADIES' Diary;
 OR
WOMAN'S ALMANACK,
 For the Year of our LORD 1782,
 Being the Second after BISSEXTILE, or LEAP-YEAR.
 Containing New Improvements in ARTS and SCIENCES,
 And many Entertaining PARTICULARS:
 Designed for the Use and Diversion of the
FAIR-SEX.

The Seventy-ninth ALMANACK Published of this Kind.



VIRTUE and SENSE, with FEMALE SOFTNESS join'd,
 (ALL that subdues and captivates Mankind!)
 In BRITAIN's Matchless FAIR resplendent shine;
 THEY rule LOVE's Empire by a Right Divine:
 Justly their Charms the astonish'd World admires,
 Whom Royal CHARLOTTE's bright Example fires.

Printed for the COMPANY of STATIONERS,
 And sold by JOHN WILKIE, at their Hall in Ludgate-Street.

[Price, stitched, NINE-PENCE.]

CHRONOLOGY OF REMARKABLE EVENTS.

<i>Y. of Christ.</i>	<i>Ys. since.</i>	<i>Y. of Christ.</i>	<i>Ys. since.</i>
1600 King Charles I. born -	182	1713 Peace with France procl. -	69
1603 Q. Eliz. died, K. Ja. succ.	179	1714 Q. Ann died, K. Geo. I. succ.	58
1603 A great Plague in London	179	1715 Rebellion in the north -	67
1605 Popish Gun-powder Plot -	177	1716 A very great frost - -	66
1616 Shakspere the poet died	166	1726 Sir Isaac Newton died -	58
1625 K. James died, Cha. I. succ.	157	1727 K. Geo. I. died, Geo. II. succ.	55
1641 Bloody Irish massacre -	141	1739 War against Spain declared	43
1642 Sir I. Newton born, Dec. 25	140	1739 A very great frost - -	43
1649 K. Charles I. beheaded -	133	1743 A great comet appeared -	39
1658 Oliver Cromwell died -	124	1744 War against France declared	38
1660 K. Charles II. restored -	122	1745 Rebellion in Scotland -	37
1662 Royal Society instituted	120	1748 A general peace - -	34
1665 Died of the plague 68,586	117	1750 Westminster bridge finished	32
1666 Great fire in London -	116	1752 Date and Calendar altered	30
1666 War against Denmark decl.	116	1756 War against France declared	26
1667 Peace with Hol. Fr. & Denm.	115	1760 K. Geo. II. died, G. III. succ.	22
1672 War against Holland decl.	110	1762 American philos. soc. instit.	20
1672 Halfpence & Farth. coined	110	1762 War against Spain declared	19
1674 Peace with Holland procl.	108	1763 Peace with France & Spain	19
1679 Habeas Corpus act passed	103	1765 Otaheite discovered -	17
1685 K. Cha. II. died, Ja. II. succ.	97	1770 Blackfriars bridge finished	13
1688 Prince of Orange landed -	94	1772 A revolution in Denmark -	12
1688 K. James II. abdicated -	94	1772 A revolution in Sweden -	12
1689 Wm. and Mary crowned	93	1775 War against America begun	11
1693 Hackney coaches established	89	1776 America declared independent	10
1702 K. Wm. died, Q. Ann succ.	80	1778 French treaty with America	10
1702 War against France declared	80	1778 War against Fr. commenced	10
1707 England & Scotland united	75	1779 War against Spain begun -	10

BIRTH-DAYS, [N.B.] 100 YEARS of the ROYAL FAMILY

KING GEORGE III. June 4, 1738	Prince Adolph. Fred. Feb. 24, 1770
Prince of Wales, August 12, - 1762	Princess Mary, April 25, - - 1771
Prince Frederick, August 16, 1763	Princess Sophia, Nov. 3, - - 1771
Prince William Henry, Aug. 21, 1765	Prince Octavius, Feb. 23, - 1771
Prs. Charl. Aug. Mat. Sept. 29, 1766	Prince Alfred, Sept. 22, - 1771
Prince Edward, Nov. 2, - - 1767	Queen Charlotte, May 19, - - 1744
Prs. Augusta Sophia, Nov. 8, - 1768	Prs. Amelia, June 10, - - 1731
Prs. Elizabeth, May 22, - - 1770	Prs. Augusta of Brunsw. Aug. 11, 1737
Prince Ernest Augustus, June 5, 1771	Duke of Gloucester, Nov. 25, 1740
Prince Aug. Fred. Jan. 27, - 1773	Duke of Cumberland, Nov. 7, 1742

YEARS of BIRTHS of the Principal Sovereigns

Cha Frederick, King of Prussia, 1712	Maria, Queen of Portugal - - 1717
Achmet IV. Grand Seigneur - 1715	Joseph Ben. Aug. Emp. Germ. 1745
Charles, King of Spain, - - 1716	Gustavus, King of Sweden, - 1746
Pius VI. Pope - - - - 1717	William V. Stadtholder, - - 1748
Victor Amada Maria, K. Sardinia 1726	Christian VII. K. of Denmark, 1746
Catherine, Empress of Russia, 1729	Ferdinand IV. King of Sicily, 1751
Stanislaus Aug. King of Poland 1732	Lewis XVI. King of France, - 1775

Last Quarter, 6th, 39 m. past 10 night.
 New Moon, 13th, 40 m. past 6 night.
 First Quarter, 21st, 45 m. past noon.
 Full Moon, 29th, 46 m. past 8 morn.

Sun enters ♈
 19d. 7h. 52m.

1	Tu	Circumcision	8	5	3	55	22	f	59	5	a	37	17
2	W			4		56			54	6		59	18
3	Th			3		57			48	8		20	19
4	F			3		57			42	9		43	20
5	S	Old Christmas Day		2		58			35	11		7	21
6	F	2d S. aft. Christ. Epip. 12th D.		1		59			28			morn	22
7	M	Plow Monday		0	4	0			20	0	30		23
8	Tu	Lucian	7	59		1			12	1	57		24
9	W			58		2			3	3	24		25
10	Th			57		3	21		54	4	54		26
11	F			56		4			45	6	22		27
12	S	Old New-Year's Day		55		5			35	7	32		28
13		1st S. aft. Epiphany Hilary		54		6			25		(fets	N	
14	M	Orf. and Cam. T. beg.		53		7			14	4	a	37	1
15	Tu			52		9			3	6		2	2
16	W			51	10	20			52	7	23		3
17	Th	Old Twelfth-Day		49		11			40	8	38		4
18	F	Q. Ch. Birth-d. kept. Prisca		48		13			27	9	51		5
19	S			47		14			15	11	1		6
20		2d Sun. aft. Epiph. Fabian		45		15			2		morn		7
21	M	Agnes. Hilary 1st Ret.		44	17	19			48	0	12		8
22	Tu	Vincent		42		18			35	1	23		9
23	W	Hilary Term begins		41		20			21	2	35		10
24	Th			39		21			6	3	49		11
25	F	Conversion of St. Paul		38		23	18		51	5	0		12
26	S			36		24			36	6	4		13
27		Septuages. S. Pr. Aug. F. b.		35		26			21	6	58		14
28	M	Hilary 2d Return [1773		33		27			5	7	37		15
29	Tu			32		29	17		49		(rises	F	
30	W	K. Cha. J. behead. 1649		30		31			32	5	a	54	17
31	Th			28		32			15	7	20		18

Days	L. of D.	Day Inc.	D. break	Fw. ends	Sun East	Cl. bef. S.	7 Stars So.
1	7 50	0 6	5 59	6 1	4 41	4 15	8 a 43
6	57	13	57	3	43	6 31	21
11	8 7	23	54	6	40	8 35	7 59
16	19	35	49	11	49	10 25	38
21	32	48	44	16	53	11 57	17
26	47	1 5	38	22	57	13 8	6 55

Last Quarter, 5th, 38 m. past 6 morn.

New Moon, 12th, 48 m. past 8 morn.

First Quarter, 20th, 18 m. past 10 morn.

Full Moon, 27th, 30 m. past 9 night.

Sun enters ♋
17 d. 22 h. 43 m.

		Sundays, Holydays, &c.	Sun rises	Sun sets	Sun's Decl.	Days & sets	Age
1	F		7 27	4 34	16 58	8 a 45	19
2	S	Purif. or Candlemas-day	25	36	41	10 9	20
3	T	Sexagesima Sund. <i>Blase</i>	23	37	23	11 35	21
4	M	Hilary, 3d Return	21	39	5	morn	22
5	Tu	<i>Agatha</i>	20	41	15 47	1 2	23
6	W		18	43	29	2 35	24
7	Th		16	44	10	3 59	25
8	F		14	46	14 51	5 15	26
9	S	Hilary, 4th Return	13	48	32	6 13	27
10	T	Quinquagesima Sunday	11	50	12	6 54	28
11	M		9	52	13 52	7 21	29
12	Tu	III. T. ends. Shrove-Tu.	7	54	32	8 sets	N
13	W	III. Wed. Old Cand. Day	5	56	12	6 a 15	1
14	Th	<i>Valentine</i>	3	57	12 52	7 29	2
15	F		1	59	31	8 41	3
16	S		0 5	1	10	9 52	4
17	T	I. S. in Lent. Quadrages.	6 58	3	11 49	11 3	5
18	M		56	5	28	morn	6
19	Tu		54	7	7	0 16	7
20	W	II. Ember Week	52	9	10 45	1 28	8
21	Th		50	11	23	2 41	9
22	F		48	13	2	3 50	10
23	S	Pr. O. S. S. born 1779	46	15	9 40	4 48	11
24	T	St. Matthias. Pr. Ad. Fr. b.	44	17	17	5 34	12
25	M	[1774: 2 S. in Lent	42	18	8 55	6 5	13
26	Tu		40	20	33	6 31	14
27	W		38	22	10	7 rises	15
28	Th		36	24	7 48	6 a 22	16

Days	L. of D.	Day In.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars S.
1	9	7	1 23	5 31	6 29	5 4	14 7"
6		25	41	23	37	9	34
11		43	59	15	45	15	41
16	10	1	2 17	6	54	20	29
21		20	36	4 57	7 3	26	13
26		40	56	48	12	32	12

Last Quarter, 6th, 31 m. past 2 aftern.
 New Moon, 14th, 21 m. before 1 morn.
 First Quarter, 22d, 25 m. past 5 morn.
 Full Moon, 29th, 11 m. past 8 morn.

Sun enters ♈
 19 d. 23 h. 10 m.

1	F	David	6	34	5	26	7	f	25	7	a	50	17
2	S	Gbad		33		28			2	9		20	18
3	F	3 Sunday in Lent		31		30	5	39	10	51		19	
4	M			29		32		16	morn			20	
5	Tu			27		34	5	53	0	21		21	
6	W			25		36		29	1	53		22	
7	Th	Perpetua		23		38		6	3	13		23	
8	F			21		40	4	43	4	15		24	
9	S			19		42		19	5	1		25	
10	F	4th, or Midlent Sunday		17		44	3	56	5	29		26	
11	M			15		46		32	5	51		27	
12	Tu	Gregory		13		48		9	6	8		28	
13	W			11		50	2	45	6	20		29	
14	Th			9		52		21	6	fets	N		
15	F			7		54	1	58	7	a	42	2	
16	S			5		56		34	8	54		3	
17	F	5 S. in Lent, St. Patrick		3		58		10	10	7		4	
18	M	Edw. K. W. S.		16		00		47	11	20		5	
19	Tu		5	59		2		23	morn			6	
20	W			57		4	on	1	0	33		7	
21	Th	Benedict		55		6		24	1	42		8	
22	F	Lamb. Term ends		53		8		48	2	43		9	
23	S	Ex. Term ends		51		10	1	12	3	34		10	
24	F	6 S. in Lent, Palm-Sund.		49		12		35	4	11		11	
25	M	Annunc, or Lady-Day		47		14		59	4	40		12	
26	Tu			45		16	2	22	5	0		13	
27	W			43		18		46	5	15		14	
28	Th	Maundy Thursday		41		20	3	9	5	30		15	
29	F	Good-Friday		39		22		33	6	rises	F		
30	S			37		24		56	8	a	29	17	
31	F	Easter-Day		35		26	4	19	10	4		18	

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars So.
1	10 52	3 8	4 43	7 17	5 36	12 37	4 a 43
6	11 11	27	32	28	42	11 30	25
11	31	47	21	39	48	10 12	7
16	51	4 7	11	49	55	8 47	3 48
21	12 11	27	0	8 0	6 1	7 17	30
26	31	47	3 48	12	7	5 44	12

Last Quarter, 4th, 8 m. past 11 night.

New Moon, 12th, 32 m. past 5 even.

First Quarter, 20th, 54 m. past 8 even.

Full Moon, 27th, 2 m. past 5 even.

Sun enters 8

19 d. 11 h. 59 m.

1	M	Easter-Monday	5	33	6	28	4	n	42	11	a	40	19
2	Tu	Easter-Tuesday		31		30	5	5		morn			20
3	W	Richard		29		32		28		1	8		21
4	Th	St. Ambrose		27		34		51		2	18		22
5	F	Old Lady-Day		25		36	6	14		3	9		23
6	S			23		38		37		3	44		24
7	F	1 S. aft. East. Low-Sund		21		40		59		4	6		25
8	M			19		42	7	22		4	25		26
9	Tu			18		43		44		4	35		27
10	W	Orf. and Cam. T. begin		16		45	8	6		4	44		28
11	Th			14		47		28		4	56		29
12	F			12		49		50		4	sets		N
13	S			10		51	9	12		8	a	1	1
14	F	2 Sunday after Easter		8		53		33		9	14		2
15	M	Easter Term, 1st Return		6		55		55		10	29		3
16	Tu	Easter Term begins		4		57	10	16		11	37		4
17	W			2		59		37		morn			5
18	Th			C	7	1		58		0	41		6
19	F	Alphege		4	59	3	11	19		1	39		7
20	S				57	5		39		2	20		8
21	F	3 Sunday after Easter			55	6	12	0		2	48		9
22	M	Easter Term, 2d Return			53	8		20		3	11		10
23	Tu	St. George			51	10		40		3	29		11
24	W				49	12	13	C		3	42		12
25	Th	St. Mark. Prs. Mary bo			48	14		19		3	56		13
26	F	[1775]			46	16		39		4	9		14
27	S				44	17		58		4	rises		F
28	F	4 Sunday after Easter			42	19	14	17		9	a	10	16
29	M	Easter Term, 3d Return			40	21		35		10	44		17
30	Tu				39	23		54		morn			18

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars, So
1	12 55	5 11	3 32	8 28	6 15	3 52	2 a 50
6	13 15	31	20	40	21	2 22	32
11	34	50	7	53	27	0 57	13
16	53	6 9	2 53	9 7	33	o aft. 5	1 55
21	14 12	28	39	21	39	1 28	36
6	30	46	23	37	44	2 25	17

N° 79

May hath xxxi Days.

7

Last Quarter, 4th, 12 m. past 9 morn.

New Moon, 12th, 11 m. past 10 morn.

First Quarter, 20th, 7 m. past 9 morn.

Full Moon, 27th, 29 m. before 1 morn.

Sun enters II
20d. 12h. 37 m.

1	W	St. Philip & St. James	4	37	7	24	15	12	0	m	10	19
2	Th			35		26		30	1	11		0
3	F	Invention of the Cross		33		28		47	1	50		21
4	S	S. aft. East. Rog. Sund.		32		30	16	5	2	17		22
5				30		32		22	2	37		23
6	M	John A.P.L. East. T. 4 Ret.		28		33		39	2	51		24
7	Tu			27		35		56	3	2		25
8	W	Ascension. Holy Thurs.		25		36	17	12	3	11		26
9	Th			23		38		28	3	21		27
10	F	Easter Term, 5 Return		22		40		44	3	32		28
11	S	S. aft. Ascens.		20		41		59	3	44		29
12		Old May D.		19		43	18	14	4	sets		N
13	M	Easter Term ends		17		44		29	9	a 33		1
14	Tu			15		46		44	10	40		2
15	W			14		47		58	11	37		3
16	Th	Orf. Term ends		12		49	19	12	morn			4
17	F			11		50		25	0	21		5
18	S	Whit. S. Q. Charl. b. 1744		10		52		39	0	54		6
19		Whit. Monday.		8		53		52	1	17		7
20	M	Whit. Tuesday Dunstan		7		54	20	4	1	35		8
21	Tu	Emb. Week. Pres. Eliz. bo.		6		56		16	1	50		9
22	W	1770		4		57		28	2	3		1
23	Th			3		58		40	2	15		11
24	F			2		59		51	2	27		12
25	S	Trin. S.		0	8	1	21	2	2	44		13
26		Augustine, A. B.	3	59		2		12	3	3		14
27	M	Ven. Bede. Trin. T. 1 Ret.		58		3		22	4	rises		F
28	Tu	K. Ch. II. Rest. 1660.		57		4		32	10	a 54		16
29	W	Orf.		56		5		41	11	45		17
30	Th	Corpus Christi. [T. beg.		55		6		5	morn			18
31	F	Trinity Term begins		54		7		59	0	17		19

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. at S.	7 Stars So.
1	14 48	7 4	2 7	9 55	6 50	3' 10"	o a 58
6	15 5	21	1 50	10 12	55	41	39
11	21	37	30	32	7 0	58	20
16	36	52	6	57	4	0	0
21	50	8 6	0 30	11 40	8	3 48	11 m 41
26	16 3	19	No Night.		12	29	21

Last Quarter, 2d, 19 m. past 9 night.
 New Moon, 11th, 25 m. past 1 morn.
 First Quarter, 18th, 52 m. past 4 aftern.
 Full Moon, 25th, 32 m. past 7 morn.

Sun enters ♌
20d. 21 h. 21 m.

1	S	Nicomede	3	53	8	0	22	7	0	m	40	20
2	F	1 Sunday after Trinity	52		0		15	0	55		21	
3	M	Trinity Term. 2 Return	51		10		2	1	7		22	
4	Tu	K. Geo. III. born, 1738	50		10		30	1	17		23	
5	W	Pr. Br. Aug. b. 1771, Bonif.	49		11		36	1	27		24	
6	Th		49		12		43	1	37		25	
7	F		48		12		48	1	49		26	
8	S		47		13		54	2	2		27	
9	F	2 Sunday after Trinity	47		14		59	2	22		28	
10	M	Prs. Am. b. 1711. Trin. T.	46		14	23	4	2	47		29	
11	Tu	St. Barnabas. [3d Ret.	46		15		8				N	
12	W		45		15		12	10	a	18	2	
13	Th		45		16		15	10	53		3	
14	F		44		16		18	11	20		4	
15	S		44		16		21	11	38		5	
16	F	3 Sunday after Trinity	44		16		23	1	53		6	
17	M	St. Alban. Trin. T. 4 Ret.	43		17		25		morn		7	
18	Tu						26	0	5		8	
19	W	Trinity Term ends					27	0	17		9	
20	Th	Transf. Edw. K. W. S.					28	0	28		10	
21	F	Longest Day					28	0	42		11	
22	S						28	0	58		12	
23	F	4 Sunday after Trinity					27	1	23		13	
24	M	St. John Baptist					26	2	2		14	
25	Tu		43		17		25		rises		F	
26	W		43		16		23	10	a	9	16	
27	Th		44		16		21	10	36		17	
28	F		44		16		18	10	54		18	
29	S	St. Peter	44		15		15	11	8		19	
30	F	5 Sunday after Trinity	45		15		11	11	19		20	

Longest Day at Lond.
 is 16 h. 34 m. 4 sec.
 allowing 9 m. 16 sec.
 for refraction.

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. aft. S.	7 Stars So.	
I	16	15	8	31	7	16	2' 38"	10 m 56
6		24		40		18	1 48	36
11		29		45		19	0 51	16
16		32		48		20	0 b 12	9 55
21		34		50		20	1 17	34
26		33	o dec. 1			20	2 20	14

No night, but
 constant day
 or twilight.

Days	
1	1
6	6
11	11
16	16
21	21
26	26

Last Quarter, 2d, 46 m. past 11 morn.
 New Moon, 10th, 59 m. past 2 aftern.
 First Quarter, 17th, 55 m. past 10 night.
 Full Moon, 24th, 21 m. past 3 aftern.

Sun enters ♌
 22 d. 8 h. 11 m.

1	M		3	45	18	14	23	n 7	11	a 30	21
2	Tu	Visitat. V. M. Cam. Com.	46		14		3	11	40		22
3	W	Dog-days begin	46		13	22	58	11	51		23
4	Th	Translation of St. Martin	47		13		53	morn			24
5	F	Old Midf. Day. Cam. T.	48		12		47	0	4		25
6	S	Oxford Act. [ends	48		11		41	0	19		26
7	F	6 S. aft. Trin. Tho. a Becket	49		11		35	0	42		27
8	M		50		10		28	1	14		28
9	Tu		51		9		21	1	57		29
10	W		51		8		14	11	sets	N	
11	Th		52		7		6	9	a 17	1	
12	F		53		6	21	5	9	38	2	
13	S	Orf Term ends.	54		5		49	9	55	3	
14	F	7 Sunday after Trinity	55		4		40	10	8	4	
15	M	Swithin	56		3		3	10	19	5	
16	Tu		5		2		21	10	32	6	
17	W		58		1		11	10	45	7	
18	Th		4	0	7	59		0	10	59	8
19	F		1		58	20	49	11	19	9	
20	S	Margaret	2		57		38	11	49	10	
21	F	8 Sunday after Trinity	3		56		27	morn		11	
22	M	Mary Magdalen	5		54		15	0	32	12	
23	Tu		6		53		3	1	38	13	
24	W		7		52	19	50	11	rises	F	
25	Th	St. James	9		50		37	8	a 55	15	
26	F	St. Anne, Mother of V. M.	10		49		24	9	9	16	
27	S		12		48		1	9	22	17	
28	F	9 Sunday after Trinity	13		46	18	57	9	32	18	
29	M		15		44		42	9	44	19	
30	Tu		16		43		28	9	54	20	
31	W		18		41		13	10	71	21	

Days	of D.	Day dec.	D breaks	Tw. ends	Sun East	Gr. def. S.	Stars So.
1	16	29	0	5	7	19	3 20 8 m 53
6		23		11		18	4 15 33
11		15		19		16	5 0 12
16		5		29		13	35 7 52
21	15	53		41		9	56 32
26		39	0	48	11	8	5 3 12

No real Night.

Last Quarter, 1st, 22 m. past 4 morn.
 New Moon, 9th, 9 m. past 3 morn.
 First Quarter, 15th, 58 m. past 3 morn.
 Full Moon, 23d, 16 m. past 1 morn.
 Last Quarter, 30th, 28 m. past 10 night.

Sun enters
 22 d. 14 h. 32 m.

1	Th	Lammas	4	19	7	40	17	58	10	a	20	22
2	F			21		38		43	10		41	23
3	S			22		37		27	11		9	24
4	Mo	Sunday after Trinity		24		35		11	1		47	25
5	M			25		34	16	55		morn		26
6	Tu	Transfiguration		27		32		38	0		38	27
7	W	Name of Jesus		29		30		22	1		45	28
8	Th			30		29		5	3		2	29
9	F			32		27	15	47		C sets	N	
10	S	St. Lawrence. [Dog Days end		34		25		30	8	a	16	2
11	F	Pr. Wals. bo. 1702. Old		36		23		12	8		29	3
12	M	[Lam.-Day		37		22	14	54	8		40	4
13	Tu			39		20		36	8		52	5
14	W			41		18		17	9		6	6
15	Th	Pr. Fred. born 1763		43		16	13	58	9		21	7
16	F			44		15		40	9		50	8
17	S			46		13		20	10		27	9
18	F	12 Sunday after Trinity		48		11		1	11		24	10
19	M			50		9	12	41		morn		11
20	Tu			52		7		22	0		37	12
21	W	Pr. Wm. Henry bo. 1765		54		6		2	2		4	13
22	Th			55		4	11	42	3		33	14
23	F			57		2		21		C rises	F	23
24	S	St. Bartholomew		59		0		1	7	a	42	16
25	F	13 Sunday after Trinity	5	1	5	58	10	40	7		55	17
26	M			3		56		19	8		6	18
27	Tu			5		54	9	58	8		16	19
28	W	St. Augustine		7		52		37	8		30	20
29	Th	St. J. Bapt. beheaded		9		51		15	8		49	21
30	F			10		49	8	54	9		12	22
31	S			12		47		32	9		45	23

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars S.
1	15 21	1 13	1 23	10 36	7 0	5 52	6 m 48
6	5	29	43	15	6 55	5 37	29
11	14 48	46	2 1	9 57	50	4 47	10
16	31	2 3	19	40	45	3 53	5 51
21	12	23	34	25	39	2 46	32
26	13 53	41	49	10	34	1 27	14

New Moon, 7th, 22 m. past 2 aftern.

First Quarter, 14th, 19 m. past 9 morn.

Full Moon, 21st, 13 m. past 2 aftern.

Last Quarter, 29th, 1 m. past 5 aftern,

Sun enters ♈
22d. 10 h. 59 m.

1	P	14 S. aft. Trin. <i>Giles</i>	5	14	6	45	8	10	10	2	32	24
2	M	London burnt, 1666		16		43	7	49	11	33		25
3	Tu			18		41		26		morn		26
4	W			20		39		4	0	4		27
5	Th			22		37	6	42	2	6		28
6	F			24		35		20	3	29		29
7	S	<i>Enurhus</i>		26		33	5	56	(sets	N	
8	P	15 S. aft. Tr. <i>Nativ. of V.M.</i>		28		31		34	6	2	55	1
9	M			30		29		12	7	6		2
10	Tu			32		27	4	49	7	19		3
11	W			34		25		20	7	36		4
12	Th			36		23		3	8	0		5
13	F			37		22	3	40	8	35		6
14	S	<i>Holy-Cross</i>		39		20		17	9	25		7
15	P	16 Sunday after Trinity		41		18	2	54	10	33		8
16	M			43		16		31	11	55		9
17	Tu	<i>Lambert</i>		45		14		7		morn		10
18	W	Ember Week		47		12	1	44	1	22		11
19	Th			49		10		21	2	47		12
20	F			51		8	0	57	4	9		13
21	S	<i>St. Matthew</i>		53		6		34	(rises	F	
22	P	17 S. aft. Tr. <i>K. Geo. III. cor.</i>		55		4		11	6	20		15
23	M	[1761. Pr. Alb. 1780]		57		2	of	13	6	31		16
24	Tu			59		0		36	6	46		17
25	W		6	5	58	1	0	7	1			18
26	Th	<i>St. Cyprian</i>		3	56		23	7	22			19
27	F			5	54		46	7	5			20
28	S	[Ch. Aug. b. 1766]		7	52	2	10	8	33			21
29	P	18 S. aft. Tr. <i>St. Mich. Prs.</i>		9	50		33	9	27			22
30	M	<i>St. Jerome</i>		11	48		57	10	35			23

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun Fac	Cl. aft S.	7 Stars So.
1	13	31	3	3	6	0	19
6		12		22		1	56
11	12	52		42		3	37
16		33	4	1		5	22
21		13		21		7	7
26	11	53		41		8	50
				6	7	52	
				53	6	27	
				39	21		
				25	14		
				15	8		
				4	2		
				52	5	56	
							4 m 52
							34
							16
							58
							41
							2

New Moon, 7th, at 1 in the morn.
 First Quarter, 13th, 21 m. past 4 aftern.
 Full Moon, 21st, 17 m. past 6 morn.
 Last Quarter, 29th, 51 m. past 10 morn.

Sun enters m
 22 d. 18 h. 52 m

1	Tu	<i>Remigius</i>	6	13	5	46	31	20	11	2	5	24
2	W		15	44		43			morn			25
3	Th		17	42	4	7	1	11				26
4	F		19	40		30	2	35				27
5	S		21	38		53	3	58				28
6	F	19 S. aft. Trin. <i>Faith</i>	23	36	5	16	5	23				29
7	M		25	34		39			sets		N	30
8	Tu		26	33	6	2	5	2	52			31
9	W	<i>St. Dengs</i>	28	31		25	6	13				32
10	Th	<i>Off. & Cam. T. beg. Old</i>	30	29		48	6	44				33
11	F	[Mic. Day]	32	27	7	11	7	27				34
12	S		34	25		33	8	31				35
13	F	20 S. aft. Trin. <i>Tr. K. Edw.</i>	36	23		56	9	52				36
14	M	[Conf.]	38	21	8	18	11	17				37
15	Tu		40	19		40			morn			38
16	W		42	17	9	3	0	42				39
17	Th	<i>Etheldred</i>	44	15		25	2	3				40
18	F	<i>St. Luke</i>	46	13		47	3	20				41
19	S		48	11	10	8	4	36				42
20	F	21 Sunday after Trinity	50	9		30	5	49				43
21	M		52	7		51			rises		F	44
22	Tu		54	5	11	13	5	2	11			45
23	W		55	4		34	5	34				46
24	Th		57	2		55	6	0				47
25	F	<i>K. Geo. III. Acc. Crispin</i>	59	0	12	15	6	36				48
26	S	<i>K. Geo. III. Procl. 1760</i>	7	1	4	58	36	7	24			49
27	F	22 Sunday after Trinity	3			56	56	8	23			50
28	M	<i>St. Simon and St. Jude</i>	5	54	13	16	9	36				51
29	Tu		7	52		36	10	53				52
30	W		8	51		56			morn			53
31	Th		10	49	14	16	0	12				54

Days	L. of D.		Day dec.	D. breaks	Tw. ends	Sun East	Cl. aft. S.	7 Stars Set							
1	11	33	5	1	4	18	7	42	5	50	10	27	3	m	5
6		14	20		29		31		44		11	57	2		47
11	10	55	39		39		21		37		13	17			28
16		35	59		49		11		31		14	24			9
21		16	6	18		58		1	25		15	18	1		51
26	9	57	37		5	7	6	52	19		15	55			30

New Moon, 5th, 15 m. past 11 morn.
 First Quarter, 12th, 20 m. past 2 morn.
 Full Moon, 20th, 26 m. before 1 morn.
 Last Quarter, 28th, 57 m. past 2 morn.

Sun enters ♄
 21 d. 15 h. 3 m.

1	F	All Saints	17	12	4	4	4	35	1	m	34	26
2	S	Fr. Edw. b. 1767. <i>All Souls</i>	14	4				54	2		56	27
3	F	23 S. aft. Tr. Pr. Soph. b.	16	43	15	13	4	22	4		22	28
4	M	[1777. Mic. T. 1 Ret.	18	42	3		5	52	5		52	29
5	Tu	Powder Plot	19	40	5		6	sets				N
6	W	Mich. Term beg. <i>Leonard</i>	21	38	16	8	4	a	42			1
7	Th	Duke of Cumb. b. 1745	23	36			5	22				2
8	F	Prs. Aug. Soph. b. 1768	24	35			6	18				3
9	S	Ld. Mayor's Day at Lond.	26	33	17	0	7	35				4
10	F	24 Sunday after Trinity	28	31			17	9				5
11	M	<i>St. Martin</i>	29	30			34	10	29			6
12	Tu	Mic. Term, 2 Return	31	28			50	11	52			7
13	W	<i>Britius</i>	33	27	18	6	morn					8
14	Th		34	25			22	1	10			9
15	F	<i>Machutus</i>	36	23			37	2	25			10
16	S		37	22			52	3	38			11
17	F	25 S. aft. Trin. <i>Hugh</i>	39	20	19	7	4	51				12
18	M	Mich. Term, 3d Return	40	19			22	6	3			13
19	Tu		42	17			36	7	13			14
20	W	<i>Edmund</i>	43	16			49	8	rises			F
21	Th		44	15	20	2	4	a	33			16
22	F	<i>Cecilia. Old Mart. Day</i>	46	13			15	5	17			17
23	S	<i>St. Clement</i>	47	12			28	6	13			18
24	F	26 Sunday after Trinity	49	11			40	7	20			19
25	M	D. Gloa. b. 1743. Mich.	50	9			52	8	33			20
26	Tu	[T. 4th Ret.	51	8	21	3	9	52				21
27	W		52	7			14	11	8			22
28	Th	Michaelmas Term ends	54	6			25	morn				23
29	F		55	5			35	0	27			24
30	S	<i>St. Andrew</i>	56	4			45	1	48			25

Days	L. of D.	Day dec.	D. breaks	Lw. eng.	Sun East	S. 1. aft. S.	7 Stars So.			
1	9	35	6	59	5	13	16' 14"	1 m 9		
6		17	7	17		7	16	8	0	49
11		1		33		2	15	41		29
16	8	45		49		57	14	53		8
21		30	8	4		53	13	45	11	43
26		17		17		49	12	16		23

New Moon, 4th, 20 m. past 9 night.
 First Quarter, 11th, 1 m. past 4 aftern.
 Full Moon, 19th, 39 m. past 7 even.
 Last Quarter, 27th, 24 m. past 4 aftern.

Sun enters ♍
 21 d. 3 h. 23 m.

1	F	Advent Sunday	7	57	4	3	21	54	3	m	12	26
2	M			58		2	22	3	4	40		27
3	Tu			59		1		12	6	15		28
4	W		8	0	0			20	6	fets	N	
5	Th			1	3	59		27	3	a	52	1
6	F	Nicholas		2		58		35	5	5		2
7	S			2		57		41	6	30		3
8	F	2 S. in Advent. <i>Concep. V.M.</i>		3		57		48	7	59		4
9	M			4		56		54	9	26		5
10	Tu			5		55		59	10	49		6
11	W			5		55	23	4	morn			7
12	Th			6		54		9	0	4		8
13	F	Lucy		6		54		13	1	17		9
14	S			6		54		16	2	30		10
15	F	3 Sunday in Advent		7		53		19	3	41		11
16	M	O Sapientia. Cam. T. ends		7		53		22	4	55		12
17	Tu	Off. Term ends		7		53		24	6	8		13
18	W	Ember Week		8		52		26	7	17		14
19	Th							27	6	rises	F	
20	F							28	3	a	55	16
21	S	St. Thomas. Shortest Day						28	5	0		17
22	F	4 Sunday in Advent						28	6	13		18
23	M							27	7	29		19
24	Tu							26	8	45		20
25	W	Christmas Day		8		52		25	10	1		21
26	Th	St. Stephen		7		53		23	11	17		22
27	F	St. John		7		53		20	morn			23
28	S	Innocents		7		53		17	0	38		24
29	F	1 Sunday aft. Christmas		6		54		14	2	0		25
30	M			6		54		10	3	29		26
31	Tu	Silvester		5		55		5	5	1		27

Shortest D. at Lond.
 is 7 h. 44 m. 17 s.
 allowing 9 m. 5 s.
 for refraction.

Days	L. of D.	Day dec.	D. breaks	Fw. ends	Sun. East	Cl. aft. S.	7 Stars So.
1	8 6	8 28	5 54	6 6	4 46	10 29	11 a 1
6	7 57	37	57	3	43	8 26	10 39
11	50	44	59	1	41	6 11	17
16	46	48	0	0	40	3 47	9 55
21	44	50	1	5 59	40	1 18	33
26	46	inc. 2	0	6 0	40	1 b 12	11

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CHRONOLOGICAL NOTES, &c. in 1782.

Dominical Letter	- - - 16	Shrove-Tuesday	- - - Feb. 12.
Golden Number	- - - 15	Easter-Day	- - - March 31.
Epact	- - - 27	Whit-Sunday	- - - May 19.
Cycle of the Sun	- - - 15	Trinity-Sunday	- - - May 26.
Roman Indiction	- - - 15	Advent-Sunday	- - - Dec. 1.

ECLIPSES, &c.

THERE are 4 eclipses this year, 2 of the sun, and 2 of the moon; but only part of one of the sun visible here.—I. The moon is eclipsed, invisible, on March 29, about our 8 o'clock in the morning.—II. The sun is eclipsed, visible, on April 12; begins on the right hand side of the sun's lower limb, at 6 h. 13 m. afternoon; but the sun sets at 6 h. 49 m. which is before the middle of the eclipse.—III. The moon is eclipsed Sept. 23, from 1h. 20 m. to 3h. 28 m. morn. which is long before the moon rises.—IV. The sun is eclipsed Oct. 7, about 1 in the morn. B

Besides these, there is a transit of Mercury over the upper part of the sun's disc, from left to right, on Nov. 12, Mercury appearing like a black spot, but so small, that some sort of a telescope will be necessary for viewing the transit. B is the beginning, at 2 h. 51 m. and E the end, at 4 h. 13 m. afternoon.



VENUS is an evening star to March 20, and then a morn. star to the end. JUPITER is a morn. star to June 15, then an even. star to the year's end.

ANSWERS to the ENIGMAS.

- | | | | |
|------------------|------------------|-----------------------|------------------|
| 1. The letter W. | 4. Arrow. | 7. Happiness. | 10. Light. |
| 2. Kiss. | 5. Strong Beer. | 8. Longest & Sh. Day. | 11. King's Arms. |
| 3. Egg. | 6. The letter O. | 9. Ladies' Diary. | Pr. Whisper. |

Pr. Enig. ans. by Mrs. Rubwell, in a WHISPER to Dr. Conundrum.

Good Doctor Conundrum, a word in your ear,
Why, Miss Peggy Lugg was quite silent last year!
* 'Tis *whisper'd*—she's false; then forget the ingrate;
And if you are really in want of a mate,
Another as witty, as excellent, fair,
Admires your soft numbers, so do not despair;
But cheer up, Old Buck, and by the next year,
The name of this fair one you'll certainly hear.

The same answered by Amintor.

Alas friend Di! poor whispering lady,	Tho' he's with another toying,
Is your voice so feeble grown?	None but you can fix the swain;
Will you faint and die already?	Soon he'll back to you be flying,
Fy! take courage, Co's not flown.	Soon you'll clasp your love again.

* We can hardly credit the insinuation here thrown out by Mrs. Rubwell, but must think she has been mis-informed concerning the frailty of Miss L. whose known constancy and excellent virtues will not permit us to attribute her silence to any other cause than either death or some severe indisposition.—In case of the worst, however, we shall expect the accomplishment of the fair Incognita's promise here made by Mrs. Rubwell, as we are not quite without hopes that our worthy doctor, notwithstanding his great antiquity, and excellent constancy, may not be altogether insensible to the tender and affectionate services of another fair hand to rub his bald pate. The EDITOR.

The Prize Enigma answered by Miss Polly Milthorp.

I've often strove your prize to gain, As often wish'd and hop'd in vain, And still pursue the bait;	Tho' something <i>whispers</i> in my ear, That maids more witty, rich, or fair, Are, Sir, more fortunate.
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Mrs. B. of Salisbury thus answers it.

A <i>Whisper</i> , its effects how strange! The warmth of friendship soon 'twill change, 'Twill anger's fiercest storms appease, The sinner's full-swoln bosom ease.	When flatt'ry tries its wily arts, Ye harmless virgins, guard your hearts; When breath'd from fearful Damon's breast In tender love, the Maid how blest!
--	--

The same answered by Miss Sarah Blackneck.

Permit a friend you little guess To <i>whisper</i> in your ear,	And ask, if this deserves the press, Ten Diaries next year.
--	--

Mr. John Stafford, of Bingham, thus answers it.

Winter is gone, the smiling flow'rs appear, And hark! the spring awakes the
tuneful grove;
Favonius *whispers* soft in Flora's ear, Now, goddess, is the gentle reign of love.

Mr. W. Allison's Answer.

As with my fair I chanc'd to walk, A spy o'erheard our am'rous talk; Cries Cloe, softly—hiss, Sir!—	Pray why, my dear? since I'm with you, I must and will my tale pursue; Then pray, Sir, only <i>whisper</i> .
---	--

Marcus thus answers the same.

The prize enig. I must confess, Is crooked as its writer S;	But, hit or miss, here goes, I'll try't— Hark in your ear, Sir—am I right?
--	---

The same by Richard Denig.

For twenty long years I've been suing the fair, And yet, like Conundrum,
a batch'lor appear:
So find by experience long courtships are vain, Unless by a *whisper* a lady I gain.

Miss Diana Browne, of Honiton, thus answers it.

The prize this year, I think's a *whisper*, | So I remain your loving sister.

The same by Eugenio.

Ye tempests cease—and let the balmy breeze Breathe in soft *whispers*
thro' the trembling trees;
Let each blithe bird attune his sweetest lay, To hail fair Leonora's natal day.

Mr. Robert Richardson's Answer.

How happy was Damon, when first in yon grove, To Phillida's cottage he
went; [sweetly *whisper'd* consent.
When in rapturous accents the youth breath'd his love, And the nymph

We are truly sorry that our limits will not include more of the ingenious answers given by Messrs. E. A. Anderson, Ashburner, Baxter, Bayley, Bonner, Bransby, Brooks, Miss Cooke of Tinsley, Miss Hannab Coward, Crane, Creepmouset, E. D. Dees, P. E. Eaton, Eland, Miss Polly Empson, Finney, Franki, Miss Maria G. H. J. H. Habgood, Hail, Harper, Harris, Hartley, Hebe, Jackson, Juvenis, Keeling, Keith, Mrs. Lean, Lodge (formerly Cælebs) Marks, Oliver, Orestes, Miss Eloisa P. Patterson, Philander, Philomachus, Miss Peggy R —n, Rainbott, Rebsur, W. Richardson, Miss Polly Ridler, Roberts, Rusber, Rusticus, Miss Betty Smales, Smith, Spry, W —s, Mrs. Amelia Stanbore, Kit Went, William Woolston, and Tam.

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The ENIGMAS answered by Dr. Conundrum.

When our antediluvian forefathers woo'd,
 Half a cent'ry elaps'd ere the nuptials ensu'd :
 Nor had they much cause to be sparing of time,
 When a girl of one hundred was just in her prime;
 And a sWain was ne'er reckon'd too ancient to wed,
 Tho' five or six ages had pass'd o'er his head. 8
 But now that our vigour so quickly decays,
 And women at forty have seen their best days,
 In prudence, each moment we ought to employ,
 And catch, while we're able, the fugitive joy.
 With no small concern, then, my own case I view,
 Who with sighs and with verses fair Peggy pursue ; 3
 For when I reflect how our minutes must fly,
 While one year she writes, and the next I reply,
 I am fearful, if e'er we should marry, I vow,
 I shall find her as old, as I find myself now, 6
 Then, O ! how the neighbours will gather, to see
 Such a pair of antiques as, I doubt, we shall be !
 And when to the temple, amid the vast throng,
 On our wooden SUPPORTERS we hobble along, 5
 What winks, and what WHISPERS, what gibes, and what jeers, Pr.
 Will on each side assault both our eyes and our ears !
 Yet think not my love with her bloom shall decay,
 Or that age shall my HAPPINESS greatly allay : 7
 Tho' time, with rude hand, all her charms shall impair,
 Her faithful Conundrum shall still think her fair :
 Tho' her eye shall grow dim, and her roses shall fade,
 In my ARMS I'll encircle the sweet wither'd maid ; 11
 The ruins of beauty with rapture I'll trace,
 And KISS the dear wrinkles that furrow her face. 2
 Yes, still shall my REED be attun'd to thy praise, 4
 Thou LIGHT of my life, and soft theme of my lays ; 10
 And in spite of grey hairs, in my mind and my song,
 Thou shalt ever be charming, and ever be young.
 Thy presence my cares and my pains shall beguile,
 And make me, with all my infirmities, smile :
 Tho' rack'd by the gout, when my Peggy is near,
 The LONGEST of DAYS shall the SHORTEST appear. 8
 With wonder our singular tale shall be read,
 Wherever the works of DIARIA shall spread ; 9
 And to ages remote in our loves shall be shown
 A brighter example than Darby and Joan.

The same answered by the Rev. Mr. Tho. Baker.

Celestial muse, your choicest pow'rs Dayly assistance for the helpless poor.
 display, Permit my brief your royal arms to
 Tune with poetic eloquence my lay ; wear,
 Aid me in smoothest numbers to And Lady D'ry, with indulgent care,
 implore,

Will soon convey it, with a pleasing smile, [fav'rite isle.	Their only <i>happiness</i> , their earthly bliss, [ing <i>kiss</i> ;
From house to house thro' Britain's	Seem now concent'ed in the part-
Now ladies, to my cause for ever true,	Round the sick parents, see the hun-
Excuse my freedom, I'll begin with you:	gry train, [in vain.
You whose kind bosoms with com-	Cold and half naked, weep for bread
passion glow, [woe;	Indeed to name each scene of their
Whose <i>list'ning ears</i> attend to tales of	distress, [oppress.
Tho' in circle gay, or at the ball,	Dear ladies, wou'd your tender hearts
In splendor shine, you'll bear the	Ye then who often feast on roast fur-
needy's call.	loins, [and wines,
Go to the cottage, cast soft pity's eye	Full pots of <i>Porter</i> , rich <i>Egg-cake</i>
Into the cheerless huts of poverty;	Amidst your <i>music</i> , mirth and jolity,
Whose tott'ring walls, with rage	Think of the wretched poor in misery;
nail'd here and there, [ing air.	Clothing and med'cine, food and fuel
Admitting <i>light</i> , admit the pierc-	send, [friend.
Within these bleak abodes perhaps	Visit the sick, and be the pris'ner's
you'll find [mind?	The king of glory will such kindness
A husband sick in body, worse in	own, [throne,
Or sunk in childbed, see his dear-	When you appear before his awful
lov'd wife,	With, "Come ye blest to all eternity,
Lie breathing out the short remains	For what you've done to them, is
of life;	done to me".

The same by Miss Polly Ridler of Hereford, to Dr. Conundrum.

Good Doctor, believe me, you yet may be *snug*,
In the arms and affections of charming Miss Lugg.
Objections are vanish'd, the lady submits:
If, therefore, you are not enamour'd by fits,
Interpret her conduct as clearly 'tis meant,
By silence we modestly give our consent.
And since of *Diaria's* daughters you've chosen,
A nymph, who can warm even blood that is frozen;
With diligence hasten, and challenge with spirit,
The *sweetest reward* of poetical merit.
What tho' you can boast nor of butler nor *porter*,
Nor promise in vanity's round to support her;
You've what are far better to offer instead,
The riches, at once, of your heart, and your head.
Who marry for self, by the wife 'tis agreed,
Their *happiness* venture on nought but a *reed*.
But founded on love, 'twill be solid, unshaken,
Adding zest to a meal e'en of *eggs* and of *bacon*.
Affection like your's ev'ry comfort must bring,
Or there's none to be found in the *arms of a king*.
If prudence should *whisper*, that love without wealth,
Is no more a blessing, than life without health;
Reply, that *U* single can suffer no trouble,
But what must determine when *U* become *double*.
Each day shall be happy, bid Peggy remember,
The *longest* in June, as the *shortest*, December.

As I
Or
My re
Wh

This done, I'll submit to the death of a martyr,
If you may not, e'er long, have a sight of her garter.

Mrs. Lacey's Answer.

How is't, my friend, that you and I
Have let so many years pass by,
The *longest and the shortest day*,
In swift succession pass away,
And yet of time should make so *light*,
As if we could retard its flight.
O! happy they, who in their youth,
Pursue the road of *beav'nly truth*!
For age comes on, with hoary hairs,
And every faculty impairs; [weak,
Our mem'ry fails, our sight grows
Our tongue doth in faint *whispers*
Nor *eggs* nor *porter* are of use [speak;
To animate our drooping muse:
Alas! how then can I declare
How the keen *reed* divides the air,
Or by a feeble, faint essay,
The *arms* of George the 3^d display?
No, 'tis in vain for me to try,
Farewel, farewell then, *Lady Di*,
And for your *kindness* to the fair,
May you their favours ever share.

The same by Dick Shin of Stony-Stratford; to Mall Ormishaw.

Say, Ormishaw, why has the *circling* sun, 6
Since thou these pages grac'd, so often run
His course celestial? Why has he made appear
The *longest day and shortest* in the year 8
So oft, whilst thou art silent? Say, does love
Connubial occupy thy thoughts? — remove
All other cares? — with sympathetic *kisses* 2
And fondest *whisper* fill thy soul with *bliss*? Pr. 7.
Has love *Diaria* banish'd from thy mind? 9
Or for some other cause has thou resign'd
Thy *reed*? — Sure the full *tankard* has no charms 4, 5
For thee. But oh! I fear that in the *arms* 11
Of sickness thou art held. Much I lament
Those hours in pain and sorrow should be spent,
Which wit and genius could so well employ
In classic lore — to raise the heart to joy,
Or melt to pity — or in sportive strain,
Under similitudes and tropes, contain
Much hidden matter, in a thinner shell
Than does an *egg* — or darkness to dispell, 3
By which the bard conceals in magic night
His thoughts, and bring the mystery to *light*. 10
Oh may those wells that near to Bristol flow,
With their warm waters wash away thy *woe*. 2
Then in these pages shall I hope thy pen
Will teach, in *trifles* may be *taste*, again.
Excuse the muse, thy talents I admire,
Nor meant it, tho' I once provok'd thine ire.

Mr. William Jones thus answers them all.

As I cheerfully traverse the plain, A nymph of such exquisite charms,
Or rest on the banks of the stream; Ne'er honour'd the village before;
My *reed* breathes a languishing strain, She fills all the *seavens* with alarms;
When Phillida graces my theme. For all must the fair-one adore.

But how shall I utter my joy,
 When first the my passion approv'd;
 How heav'd her soft breast with a sigh,
 While *wibbys* inform'd me, she lov'd.
 I crop the gay flow'rets of spring,
 The birds shall their *treasure* re-
 sign,
 To deck the sweet chaplet I'll bring,
 My Phillida's brows to entwine.
 Then why will my charmer delay
 To perfect her Corydon's bliss;
 To Hymen let's hasten away,
 And seal his chaste rites with a *kiss*.

Our flocks then with freedom shall
 graze,
 While we sit in the vernal alcove;
 Thus shall *happiness* crown all our days,
 And our cot be the mansion of love.
 Of health and contentment possess,
 No sighs shall for grandeur arise:
 No porter our friends shall molest,
 The wretched we'll never despise.
 When sol shall to Thetis retire,
 I'll amuse her with pastoral lays;
 The nymphs shall my sonnets admire,
 And *Diaria* resound with her praise.

The same by Mr. Rob. Richardson, of Frosterly.

Soft o'er the bosom of the flow'ry mead,
 Thro' tender osiers breath'd the vernal gale;
 When wretched Sylvia tun'd her "lonely *reed*",
 And list'ning echo caught the tender tale.
 "Ye sweet recesses of the vocal grove,
 Where Philomel attunes her love-lorn lay;
 Where peace and innocence together rove,
 And rising pleasures crown each *rising day*;
 Where oft, beneath yon elm's o'er arching shade,
 Or where yon woodbines form a fragrant bow'r;
 At dawn of eve, with Celadon I've stray'd,
 And bound his crook with many a beauteous flow'r.
 Where, early as the *herald* of the morn,
 O'erjoy'd I flew to meet the lovely youth;
 Where *wibbys* ring breezes *kiss* yon mantled thorn,
 To plight my vows of endless faith and *truth*.
 Where down yon hill the crystal *biv'rage* flows,
 Where first we met, — first felt a mutual flame;
 Sacred to love, the humble cottage rose,
 And *changing seasons* found us still the same.
 'Tis done! — 'tis done! — the fairy scene is fled,
 To yonder grove my shepherd's corse they bore;
 With cypress boughs they shade his "clay-cold" bed: —
 'Tis done! — 'tis done! — the joys of life are o'er!"

x, 4

10

6

11

Pr. 2

7

5

8

3d Enig. an egg;
 9th L. Di'ry.

The same answered by Creep-mouse.

Now at this jovial time o'th' year,
 Fam'd for long evenings and good cheer,
 When jocund mortals are most *bappy*,
 And tankards smile with reaming
nappy,
 When with *rude pip* the tuneful poor
 Chaunt their loud carols at each door,
 Dear *Lady Di'ry*, with submission,
 Again an honest cock's petition

Awaits you, and O may his feelings
 No more experience partial dealings,
 May *gentlemen* be not neglected,
 For country squires, more respected.
 Now let me *wibbys* in your ear,
 Kissing I'm told goes every where
 By favour; tho' I'm not offended,
 Presuming no offence intended,

4.

M

Sna

L

Yet 'tis a proverb still in season, | Therefore in fine I humbly pray,
 "In roasting eggs there shou'd be | That ev'ry dog may have his day.
 reason"; [Granted.]

The same by Eugenio.

What state is so blest as a sweet single life? 1
 I'm plagu'd with no children, nor vex'd with a wife;
 I rise when I like, go to bed when I please,
 And spend all my days in a circle of ease. — 8, 6
 I've heard of young Cupid, his bow and his darts,
 And that he can wound (when he pleases) our hearts;
 But laugh at his power, his arrows defy, 4
 Still *kiss* and am free, nor regard him, not I. 2
 Let others disconsolate—stray thro' the meads,
 And breathe their soft sighs midst the *whispering reeds*; Pr. 4
 If my fair one's unkind, to *king's arms* I repair, 11
 And drown, in a tankard of *porter*, my care. — 5
 At eve when bright Phebus his *light* has withdrawn, 10
 And left veil'd in darkness each hill, grove, and lawn,
 The *Di'ry* I often peruse with delight, 9
 And wish that like Woolston I verses could write. —
 On an *egg* oft I sup; which, on freedom's fair coast, 3
 I prefer to rich dainties—where liberty's lost. —
 Thus, free from all sorrow, contented I live,
 Nor grieve for the *happinefs*—Hymen can give. 7

Mr. T. Woolston, in the Character of a Person under Mental Affliction, thus answers the same, in an Ode to Melancholy.

1. What to me are <i>eggs</i> or <i>porter</i> ?	5. Where the lofty pines hang bending
What to me are <i>blazon'd arms</i> ?	O'er the dark tremendous steep,
Or if <i>days be long or shorter</i> ?	Solitary thoughts befriending,
Vain are lov'd <i>Diaria's</i> charms.	Let me there retire to weep.
2. Flown are all those <i>blissful</i> hours	6. Awful lonesome shades receive me,
When the zephyr's <i>whisp'ring</i> gales	Hide me from the piercing light,
(Sweeping soft the humid flowers	Let your kind retreats relieve me,
Down the daisy-painted vales.)	Till th'arrive of black-brow'd night.
3. Wasted health in balmy <i>kisses</i> —	7. Then while shady forms are gliding
Blest <i>delight</i> of vernal youth—	O'er the dreary vaulted tombs,
When I own'd those highest blisses,	Ev'ry worldly thought subsiding,
Virtue pure and heav'nly truth.	Let me hail the pleasing glooms,
4. Come then soothing melancholy,	8. Then in silent darkness chusing
Mild, majestic, pensive queen,	Soft beneath its veil to stray,
Snatch me from those haunts of folly,	On heav'n's blissful glories musing,
Let me steal thro' life unseen.	Weeping all my woes away.

Mr. William Allifon's Answer.

T' other night as I alone sat puzzling my brain,
 Endeav'ring th' enigmas aright to explain;
 Who should enter but Chloe, and jestingly cries,
 "I'll bet you a *bottle* you don't know the prize".

5

No sooner propos'd than the wager was laid,
 For, who could refuse to oblige the dear maid?
 "What is't then?" cries Chloe, I answered her straight,
 'Tis neither egg, nor king's arms, cipher, nor light; 3, 11, 6, 10
 And if Di'ry speaks truth, ma'am, I greatly dispute,
 If summer or winter the theme better suit:" 9
 With the smile of a cherub, "reflect", she reply'd, 8
 (For the secret no longer the fair-one could hide)
 "Last midsummer's eve, in the jessamine grove,
 When Sylvia set near, how you breath'd forth your love;" Pr.
 Then pointing the second, cries "pray answer this,"
 Enraptur'd, I seal'd her sweet lips with a kiss. 2

The same by Mr. Thomas Eland.

When first in mine ear The voice of my dear Whisper'd softly, "I own I'm in love; Transported with bliss, An ambrosial kiss I took from the lips of my dove. O, what tender alarms, Press'd in each other's arms, My breast glow'd with amorous youth; All night and all day, Enraptur'd we lay, [truth. And I long'd for,—but must not tell	L. Diary believe, Thought cannot conceive How delightful the minutes did pass; British porter or ale A while may prevail, [last But must yield to the charms of my When Strephon, she cry'd, Will you make me a bride, This fond brooding care to remove; This moment my fair, We'll to Hymen repair, And drown Cupid's arrow in love.
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The same answered by Kit Went.

The first must be a W, The next a loving kiss; The third, an egg appears to view, A reed, the fourth I guess. Then porter, cipher, bliss, they may Most properly appear,	With longest and the shortest day Contained in the year. The ninth, the Ladies' Di'ry charms, The tenth, light signifies; Th' 11th is a coat of arms, A whisper is the prize.
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Other ingenious general answers were received from Messrs. Ez. Ambrose, J. Bayley, G. Baxter, Miss S. Blackneck, Mrs. E. Bonner, R. Bownas, Miss Di. Browne, Miss E. Cooke, E. D. R. Dowden, Miss M. Empson, G. Fletcher, J. Franks, J. H. R. Hartley, W. Hawkes, J. Jackson, Juvenis. Mrs. B. Lean, Lorenzo, Marcus, J. Marks, S. Oliver, Philo, W. Rebsur, W. Richardson, Rusticus, Miss B. Smales, F. Smith, R. Willet, P. Williams, and W. Yam.

ANSWERS to the QUERIES, REBUSES, &c.

The REBUSES answered by Mr. R. Richardson, to J. Dixon,
 Esq; S. Shields, Durham,

To gain a nymph whose angel-form Might well the coldest bosom warm, My youthful steps I fondly bent To Doncaster—to Newport went;	To Harrowgate—to Guisland too, (Where fortune gave a friend in you) The huge Calash, th' umbrella's shade, Explor'd in vain; the gentle maid
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In scenes like these, ne'er design'd to And clasp'd her to my beating breast.
 dwell; Affliction's rod resigns its pow'r;
 I fought her in the humble cell, New pleasures crown each rising hour;
 'Twas here I found the lovely guest, In peace and joy our days are spent,
 Here endless faith and truth profess'd, For, Damon's wedded to content.

The same by Mr. J. Bayley of Middleton, Yorkshire.

*Doncaster, calash, rod, ten, net, or snare,
 Newport, and marry, each rebus declare.*

The same answered by T. B. of Doncaster.

To marry a daughter, to *Newport* I I reason'd and argu'd that nine girls
 went, [content, in *ten*, [pen;
 At *Doncaster* leaving my wife, dis- Prefer'd a good husband to *netting* or
 She scolded and rav'd, and declar'd She look'd in great anger, but an-
 with a nod, swer'd no more, [door.
 'Twere better a girl at 16 had a *rod*. Put on her *calash*, and walk'd out of

Miss Maria G. thus answers them.

To hide my face or veil my beauty, To marry I have no intention
 No *calash* I need to wear; 'Till a few more suns goes round.
 Far remote from crouds I'm seated, Then perhaps, if honest Damon
 Nor at *Doncaster* appear. Should from *Newport* bend his way,
 Not a *rod* within my mansion I, tho' free, may be entangled
 Is there ever to be found; In that *net* that holds the prey.

The same by Miss Betty Smales.

A *calash* may conceal the fair face of the toast
 That thinks herself something divine;
 No *Newport* nor *Doncaster*'s ladies can boast,
 Of happiness equal to mine:
 I'm young and unmarried, I'm free from all care;
 Twice *ten* years and one I've just seen;
 The *rod* of the critic I dreaded last year,
 But now am content as a queen.

The same by Miss Diana Browne.

*Calash, Doncaster, rod, and marry,
 Newport and ten, cannot miscarry.*

Various other ingenious answers were given by Messrs. W. Allison, G. Baxter, Miss S. Blackneck, Mrs. Eliz. Bonner, R. Bowmas, Mr. Brooks, Miss Eliz. Cocke, Miss Hannab Coward, E. D., R. Dees, R. Denning, R. Dowden, T. Eaton, T. Eland, J. Finney, J. Fletcher, G. Fletcher, J. Franks, J. Gruby, J. Hall, R. Harper, R. Hartley, W. Hawkes, J. Jackson, Juvenis, S. Keat, J. Keeling, Mrs. B. Lean, R. M., Marcus, Maria, J. Marks, S. Oliver, Philo, Philomathes, T. Rainbott, W. Rehjur, W. Richardson, A. Rowe, Dick Sbin, F. Smith, Mr. Stone, W. Swift, W. Terril, W. Turner, J. W—t, and T. Woolston.

QUERY I. answered by Mr. Mark Elstob, of Shotton.

In my "Trip to Kilkenny" (sold by Goldsmith, Paternoster-Row)
 pa. 17, I have given my opinion on this subject to this effect: The excess

live cold perceivable on moors, &c. must be the effect of one or more of the three subsequent causes. 1st, The matter of cold, which adheres to the particles of the air, and is carried about with them, not meeting with any interposition from hedges, is not dashed off, nor diminished. 2d, The matter of cold may be greatly encreased by the exhalations from the particular quality of the soil. 3d, The momentum of the air, &c. will be much greater than in enclosures, from its meeting with no obstacle to retard its motion, &c.

Mr *Samuel Oliver* says, The reason proceeds from the ground being manured and inclosed; the manure affording heat in continual emanations, and the inclosures keeping it confined, as well as preventing the free current of cold air.

Mr. *John Jackson*, besides the above reasons, alledges also the effect of the watery exhalations from waste grounds, and that of their relatively higher situation in the atmosphere.

It was also ingeniously answered by Messrs. *Fletcher, Marcus Rainbott, Richardson, Rowe, Scholasticus, Smith, Swift, Turner, and Miss Eliz. Cooke.*

II. QUERY answered by Clericus.

The reason of the custom seems to depend on the peculiar satisfaction bodies derive from mutual contact. Attraction is a law that pervades our whole system; and hence all bodies tend to one another; and from their union the animate part of the creation at least finds ineffable pleasure. And the hand being a part well adapted for a conjunction, has enjoyed that privilege, from convenience I suppose. This gentleman then enumerates several passages of both sacred and profane writers, to shew the great antiquity of the custom, which seems to have commenced almost with the creation; and then concludes, it is remarkable that the original expression of a man cleaving to his wife, in Gen. 2 c. 24 v. gives us the idea of parts in contact.

Miss *Eliz. Cooke*, says, The custom of shaking or joining hands, seems to be coeval with mankind; as, in my apprehension, it arises from an impulse of nature, expressive of the great joy at the sudden meeting of a friend in whose company we have great pleasure; which is now extended by custom to a common form of civility.

Nearly in the same manner was the answer given by Messrs. *Fletcher, Jackson, Marcus, Oliver, Richardson, Swift, and Turner.*

III. QUERY answered by Mr. Geo. Fletcher, of Sheffield.

I am inclined to believe the bird which the Romans called *Cygnus*, to be quite different from our swans, because most ancients agree in its singing, and particularly before death; and Horace mentions it as a musical bird, without the circumstance as a prelude to its non-existence.

Mr. *Jackson* says, As all creatures suffer some pain, and often for a length of time, before their death, which causes them to mourn or complain; so the Swan may have a plaintive piping note to mourn its pain, and which may, by mistake, be deemed a singing, as a prelude to its dissolution. — And Miss *Eliz. Cooke* says the same. — *Marcus* says he has it from unquestionable authority, that the Swan makes a kind of shrieking a little before its death. — And Mr. *Samuel Oliver* says, A gentleman of my acquaintance assures me, that he has heard the wild Swan

sing, as by the *Query*, and that several others have immediately gathered round it, and joined in a kind of elegiac chorus. — Messrs. *Richardson*, *Rowe*, *Swift*, and *Turner*, are much of the same opinion; and Mr. *Francis Smith* shews from the anatomy of the heads of birds, that our swans cannot be accounted musical in the sense in which we speak of singing birds.

IV. QUERY answered by Mr. J. Jackson, of Northallerton.

“There is among the ancients a tradition, that the God of Love made a very beautiful rose, the first that had been known, to Harpocrates the God of Silence, and gave it him to engage him not to discover any of his intrigues to his mother Venus. Hence proceeded a custom to place a rose in the rooms where they met for mirth and divertisement, to intimate that under the assurance thereof they might lay aside all constraint and speak what they pleased, and so the rose became a symbol of silence”. — This gave rise to the expression *Under the Rose*, and is also the reason why that flower is dedicated to secrecy in so particular a manner.

Almost exactly in the same manner was it answered by Mr. *Fletcher*. It was also ingeniously answered by Miss *Cooke*, and by Messrs. *Marcus*, *Oliver*, *Richardson*, *Rowe*, and *Turner*.

V. QUERY answered by Mr. John Jackson.

If the bubble of air, together with the component matter within the egg, be broken by brisk shaking, and the egg placed on a flat surface on its greater end, and there held a small space of time by a steady hand; the heaviest parts of the matter in the egg will settle to the bottom, and will keep it in an upright position.

This was also answered by Miss *Cooke*, and by Messrs. *Bayley*, *Fletcher*, *Marcus*, *Oliver*, *R. Richardson*, *W. Richardson*, *Rowe*, *Smith*, and *Turner*.

NEW ENIGMAS.

I. ENIGMA 625, by T. W.

How, ladies, has it come to pass,	Which they devour without remorse,
That I in enigmatic glass,	And empty leave my plunder'd corse,
Have ne'er been held to public sight,	I oft with heated fury burn,
To kill a tedious winter's night?	Yet never injure them in turn;
My form, 'tis somewhat strange to	Nay e'en before I cool am grown,
tell ye, [belly.	My service has forgiveness shewn.
Exhibits nought but mouth and	To all so needful is my aid,
A friend to men I've ever been,	That it with thanks should be re-
From beggar to the king and queen:	paid;
For what my spacious paunch con-	For providence can scarce befriend
tains,	'em,
Mankind in life and health sustains.	Unless I my assistance lend 'em.
Themselves to nourish, and their	Ye learned fair discover then,
brood,	Who this warm friend can be to
Men force me to disgorge my food,	men.

II. ENIGMA 626, by Mr. John Jackson, of Northallerton.

First know that I in paradise did dwell,
 If even our great Milton truth does tell;
 And there, as well as here, I do set forth,
 Have always the most busy been on earth;
 And tho' I choose good grounds for what I do,
 Yet still I sometimes err as well as you.
 I'm oft in *burries*, tho' I ne'er want *time*,
 And oft want *money*, tho' the *mint* is mine.
 I'm such a *raker*, that it is no wonder
 I'm often poor, and stand in need of *plunder*.
 But here you'll think that I'm a *spendebriest* grown,
 Indeed I *painted ladies* keep, I own;
 And *rapes* on other *beds* I have committed,
 Ah! here you'll say, he's for the *galloves* fitted.
 But stop, dear ladies, — this more strange to tell,
 For all these things my wife does love me well.
 Two other things I have reverse to nature,
 For if I have the *gravel*, I walk better;
 And e'en in a *consumption* thrive the best,
 Tho' I, like you, am easy when at rest.

III. ENIGMA 627, by Mrs. Blanch Lean.

<p>In many countries I'm produc'd, And am to man a blessing: But blessings, when they are abus'd, A curse prove in possessing. There liv'd a race of men on earth With nature not contented, From them did art derive her birth, In various shapes invented; 'Mong those, the art to drain my Was held in veneration, [blood, And deem'd to be extremely good, In almost ev'ry nation.</p>	<p>The bucks and rakes, and such like And each audacious varlet, [breed, When they can get it, they'll exceed The Babylonish harlot; Then, ladies, would you know the They're capable of doing, [crime One letter taken from my name, Will shew it to your viewing; But justice soon pursues the rakes, 'Fore whom they stand and tremble, Then from my name two letters take, You'll see what they resemble.</p>
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IV. ENIGMA 628, by Lorenzo.

<p>Dear ladies, sisters, for to you I will reveal what's surely true, I cannot tell you what I am, For I am never twice the same; I in so many shapes appear, That Proteus, if he were but here, And thinking on my ways, wou'd own That no one is so fickle known. You, ladies, very often say, You're sure to mention ev'ry day, That man's the most inconstant crea- ture, Of all things form'd by art or na-</p>	<p>But I their advocate will be; If ever once you think on me, You'll own, with Proteus, you are For I can never tarry long. [wrong, Go weigh the air and measure wind, In chains the angry billows bind; If to such arts you can attain, Perhaps a captive I'll remain: Nay, tho' I know myself so well, My shape I really cannot tell; And 'tis much thought by great and small, I really have no shape at all.</p>
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They who philosophers have read, Will find that they have often said, That all their labour was in vain, Whene'er they try'd me to explain.	Some say I am; and yet agree, I never was, nor e'er can be: And then some wiseones loudly bawl, I never being had at all.
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V. ENIGMA 629, by Mr. Rob. Richardson, of Frosterly.

Where nature's desert prospects open wide,
 And fleeting snows descend on every side;
 Where the mute warblers croud the leafless spray,
 And furly Boreas ushers in the day:
 Hard by yon copse that skirts the trackless mead,
 A stately dome uprears its lofty head:
 With nicest judgment form'd in ev'ry part;
 The boast of labour, and the pride of art:
 (As erst ambitious Egypt's kings design'd
 To spread their fame, — the wonder of mankind!)
 'Tis here, in happier days beneath the shade,
 A virgin train, in snow-white robes array'd,
 In sportive measures lead the mystic dance;
 Whilst, crown'd with joy, the laughing hours advance:
 But timely warn'd, they fly the destin'd ground,
 Where desolating horror broods around! —
 Yet here, tho' thickest glooms obscure the day,
 A sage enchanter bends his devious way;
 (He by whose magic force Britannia stands
 The dread and wonder of surrounding lands)
 With aspect fierce, the lofty dome ascends,
 Which to his sov'reign pow'r obsequious bends;
 In vain the architect with nicest art,
 Had rais'd the pile, and fortify'd each part!
 Beneath his stroke its strongest bulwarks fly,
 A prey to Eurus, and a frowning sky!
 Nor rests his rage; — a train of imps he calls,
 Who, gath'ring round, assail the naked walls; —
 Yet, whilst it tott'ring stands, ye fair, proclaim
 Its fading glory in the page of fame.

VI. ENIGMA 630, by Kit Went.

In these corrupt, degen'rate times, When men are rais'd for their crimes, Utility I boast; And if my path they will pursue, By easy steps I'll lead 'm to Possess the highest post. There are, who with a good address, Pursu'd my steps with eagerness, And did their hopes attain; But finding what a pond'rous weight They had to bear, resigned strait, And soon retir'd again.	Indeed I am so much in vogue, That manyan honest man, and rogue, Have rais'd been by me; Yet there are none who can ascribe, To me receiving any bribe, Or e'en a paltry fee. [gag'd, When Britain's sons have been en- Where war and dreadful slaughter I have assistance given; [rag'd, Likewise where fancy's airy scence, Or where strange thoughts oft inter- I've shewn the way to heaven. [vene,
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VII. ENIGMA 631, by S. L. J.

<p>An emblem both of grief and joy Would fair Diarian's thro'ts employ, And hope 'twill not be deemed rude, Since as no stranger I intrude. — Both sexes my acquaintance share, Tho' most I'm frequent with the fair, And act that truly worthy part, To speak the feelings of the heart. — When gloomy sorrows fill the breast, By me those sorrows are express'd: When social mirth and joys abound, And peals of laughter burst around, I'm oft attendant on that mirth, Those peals of laughter give me birth When friendless orphans make their pray'r, By me they witness their despair; And widows too by me would move</p>	<p>Mankind to pity and to love. I'm pity's child, no gen'rous breast Of me was ever dispossess'd. Love prompts me sometimes to attend The fun'ral service of a friend. At Hymen's altar too I've been; Oft with the happy fair-one seen; And oft have giv'n the lover aid, To win attention from his maid, On crowned heads I sometimes wait; On men of ev'ry rank and state; Have rested on the regal bed, And on the cheek of beauty fed: I've too—but hush! too far I've gone, Then onelint more and I'll have done, From dreams I've sprung while man has slept, [wept". And shone most bright when "Jesus</p>
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VIII. ENIGMA 632, by Daphne.

<p>Ladies permit a mask to greet ye, Nor hurry by me when you meet me; For little as you find my stature, Of great importance is my nature; The king himself great def'rence pays me, And ever when we meet obeys me; Nay this a truth beyond dispute is, He in my presence always mute is. I generally appear in fable, But if I will in gold I'm able. You find me oft near woodbine bow'rs, Or purling rills, and banks of flow'rs; And often too near purling fountains, Or at the feet of lofty mountains. Yet hostile scenes alike delight me, Nor can the murd'rous engine fright me.</p>	<p>By keeping always in the rear-guard, My brethren's posts may bolder shew them, [them: For nearer much the van you view They're 3 in number, and their sta- tion's, Like mine, useful to most nations; Nay think not this is a delusion, For without us all is confusion; When num'rous bands, the plains o'rspreading, [ing, Would on each others heels be tread- My brethren lend me their assistance, To keep 'twixt each a proper distance: But yet their worth's of less dimension Than that to which I have pretention; They, mixing in disputes, befriend 'em,</p>
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'Tis true I do myself from fear guard, Whilst I alone am sure to end 'em,

IX. ENIGMA 633, by Eugenio.

Deep in a cavern hid from mortal sight
I live, debarr'd of ev'ry ray of light.
From thence I never yet was known to rove,
Yet all will own I do not cease to move.
Tho' thus confin'd within my cell I keep,
I oft have wander'd o'er the foaming deep,
Have brav'd the heat beneath the torrid zone,
And been in lands to Britons yet unknown,

Tho' sometimes of the smallest force afraid,
 I've been in hottest battles undismay'd;
 Have fac'd the cannon, and the shining lance,
 When pointed by the bravest sons of France;
 Undanted oft have plung'd amid the main,
 Soar'd high in air, or skim'd the flow'ry plain.
 Bereft of me the gen'ral could not fight,
 The lawyer argue, nor the poet write;
 The lover could not tell, without my aid,
 His tender passion to the blushing maid. —
 Strange inconsistencies in me appear,
 I'm bold and fearful, tender and severe,
 Cheerful and melancholy, false and true,
 Deceitful, honest, kind and cruel too;
 I'm hard and soft, good, bad, and old and young,
 Animate, inanimate, weak and strong. —
 Take one hint more, and then my name I crave,
 Ladies, I'm what you have — or ought to have.

X. ENIGMA 634, by Miss Polly Ridler, of Hereford.

I am a composition odd,
 Was ne'er design'd perhaps by God.
 What is my form you'll hardly guess,
 For I nor head nor hands possess:
 Yet feet I have, tho' never walk;
 Use many words, yet never talk.
 Both pain and pleasure I can give,
 And longer than my maker live.
 Perhaps my sex I should reveal;
 I'm neither female then nor male.

'Tis strange you'll say, but still 'tis true,
 I'm born of man and woman too.
 And tho' to none I ever speak,
 Both sexes my acquaintance seek.
 My parts must be minutely ken'd,
 Before I'm known to dearest friend;
 For oft my feature-lines in vain,
 Are studied o'er and o'er again:
 And even tho' before your eye,
 You sometimes cannot me descry.

XI. ENIGMA 635, by Mr. William Jones, of Hayford.

List, ye fair, and I'll discover
 What perhaps will make you smile
 In the absence of your lover,
 And a pensive hour beguile,
 Argus, fam'd in ancient story,
 Can't for eyes with me compare;
 Can't of greater actions glory,
 In the service of the fair.
 Should a polish'd gay intruder
 On your spotless garments seize,
 I push off the sly deluder; —
 All my pride's to give you ease.

I from danger oft defend you,
 When you're sporting o'er the lawn;
 Tho' a pigmy I befriend you,
 Help you pierce the wanton fawn.
 I assist to stop the rover,
 Whether Irish, Scotch, or Dutch,
 Fix their borders, bind them over,
 Lest they should infringe too much.
 More I could, but dare not tell you,
 Lest I should appear too vain:
 From what's said, the beau, and belle too,
 Will with ease my name explain.

XII. (PRIZE) ENIGMA 636, by Mr. T. Woolston,
of Adderbury, Oxon.

My youthful days are spent among the swains,
Where peace and freedom blefs the flow'ry plains;
Or on the silver streams in verdant meads,
Where zephyrs softly whisper thro' the reeds.
Protected by my parent there I rove,
In those gay scenes of innocence and love.
But ah! what ills await the fatal day,
When from those scenes my parent's forc'd away:
In vain I lend my aid, she falls forlorn,
And from her soft'ring side by force I'm torn;
Helpless, in vain she must my loss deplore,
For I alas! must see her face no more.

In size I'm found a little dapper spright:
(My colour various; oft of purest white;)
Yet tho' so small, the wonders I have wrought,
Almost surpass the bounds of human thought;
My legal offspring mighty kingdoms sway,
And potentates themselves must these obey.
When nature's laws the god-like Newton scan'd,
And science rose beneath his plastic hand.
He flew to me each motion to explain,
Or still mankind had sought the cause in vain.
Such my extensive pow'r, it may be said,
That laws and arts subsist but by my aid.

On yonder sloping plain a cavern lies,
Whose depth profound my needful want supplies;
A dismal place, no chearful glimpse of light,
But gloomy darkness black as tenfold night,
And awful silence, reign — there far from day,
Where mortal yet was never known to stray,
In those drear regions undismay'd I stand,
And, monarch-like, maintain the sole command.

By thirst of gold, or cursed lust of power
Impel'd, I move in some ill-fated hour;
Collecting all my force, I issue forth,
Black as the tempest rising from the north,
In columns leading on a mighty train,
And scatter thousands o'er the list'd plain.

Another hint to clear the mind from doubt,
I may assist perhaps to find me out.

NEW REBUSES and QUERIES.

I. REBUS, by Orestes, of Penryn.

The instrument that lovers use,	When join'd to what I've often said
Their am'rous passion to disclose,	Her cheeks were like, being lovely red,

With ease a nymph will bring to view,
Who's kind, sincere, and virtuous too.

But tho' her name you now express,
For two to one you are to guess.*

**Being on the eve of matrimony.*

II. REBUS, by Mr. John Stafford, of Bingham.

A measure ye fair that in scripture is nam'd,
The letters therein if they're properly fram'd,
Disclose a large city in days of yore fam'd.

III. REBUS, by R. M.

The bold commander, who from Greece	A name that rules the British land ;
Did fail to fetch the golden fleece ;	And what becomes a soldier's hand ;
The British prince who did prevent	The drowsy bird that rules the night ;
The Danish Hubba's proud intent.	The ruler of the ocean bright :
The noble herald of the morn,	Th' initials join'd, the name will
Who acquaints you, day is born ;	shew
	Of one whose learned, kind, and true.

IV. REBUS, by Mr. John Bayley, of Middleton, Yorkshire.

A fragrant flower by ladies much ador'd,
A grain Great Britain doth in store afford,
A charm in maids that first attracts the sight,
A father's joy and most supreme delight,
A fruit in form like the terrestrial ball,
A bird whose notes admired are by all.
If these initials you are pleas'd to join,
They'll name a fair in whom all virtues shine.

V. REBUS, by Daphne.

Let us, ye fair, five hundred gain,	We then shall see, for all our pain,
And near it place a trusty guard,	If prudence guides, a sweet reward.

VI. REBUS, by Mr. R. Richardson, of Frosterly.

She who in vain foretold the fall of Troy ;
And she, belov'd by Priam's am'rous boy ;
Cynara's son, by Venus mourn'd in vain,
When the fierce boar her lovely hope had slain ;
The king whose son by lawless conquest hurl'd
Death and destruction o'er a blessing world ;
The faithful guardian of Uliasses' son,
Who taught him, vice in all its shapes, to shun ;
The Grecian chief who for a girl did weep ;
And he whose trident rules the roaring deep.

Th' initials join'd, you thence may quickly trace
 "A maid unmatch'd in manners as in face;
 Skill'd in each art, and crown'd with ev'ry grace."
 Where Wear's fair stream its parent ocean joins,
 The pride, the envy of her sex she shines.

I. QUERY, by Mr. Robert Richardson.

Whence arose the interjection *Bo!* or *Bob!* — a word of terror, used by nurses to frighten children?

II. QUERY, by Mr. Samuel Oliver, of Mansfield.

Whether is much Scientific learning, a little, or none at all, most conducive to human happiness?

III. QUERY, by Philarithmus.

There is a latin saying, *Butyrum mane est aurum, meridie argentum, vesperi plumbum*; that is, Butter is gold in the morning, silver at noon, lead at night: can any physical reason be assigned for this operative quality of butter on the animal œconomy?

IV. QUERY, by J. H. Junior.

Set a tankard full of ale with the ear opposite the fire; the ale will heat, and the ear will not be hot. Required the reason.

V. QUERY, by Mr. J. Jackson, of Northallerton.

What is the true reason why men drinking freely of wine, should be intoxicated; when eating ever so freely of the fruit or grapes, never has that effect.

* * * The number of prizes are eight, to be determined by lot, viz. one of 10 and one of 8 diaries for the solutions of the prize-enigma; two of 10 diaries each for the general solutions of the enigmas; two of 8 diaries each for the solutions of the queries and rebuses; also one of 12 and one of 8 diaries for the solution of the prize-question. The competitors for the prizes given for the solutions of the prize enigma and prize question, must send their letters, containing those solutions, before Candlemas day; and all other letters for the use of the Diary, must be sent before the 1st of May. — Our correspondents are requested to make their compositions as short as possible with propriety; as many are unavoidably omitted from their too great length. They are not however always to conclude that their pieces are rejected when they do not see them inserted the 1st or 2d year after they are sent; because they are often kept back for several years, thro' the great number that come to hand, that we may give every one his turn. — Solutions to be sent with all new propositions. — The letters of Mr. Tho. Barker, Mr. J. Roope, and Mr. J. Young, came too late to hand last year to be acknowledged.

ANSWERS to the MATHEMATICAL QUESTIONS.

I. Question 772 answered by Mr. Thomas Serjeant*.

SINCE each equation contains the square of a letter together with the product of that letter by the sum of all the other letters, it is evident that the sum of all the equations will be the square of the sum of all the letters, and therefore the square root of the sum of the equations is $v + x + y + z = \sqrt{1296} = 36$; by which dividing each of the equations, we have $v = 252 \div 36 = 7$, $x = 504 \div 36 = 14$, $y = 396 \div 36 = 11$, and $z = 144 \div 36 = 4$. Hence

GOLD is what the nymph requires;

Grant her that, she'll quench your fires.

And thus was the solution given by Messrs. Ro. Bownas, Ra. Dees, J. Fletcher, Horticultura, J. Lean, W. Paull, W. Penn, W. Reynolds, W. Richardson, Jo. Saul, and Ja. Williams.—But the proposer, Mr. J. Penbertby, as also Messrs. J. Bransby, J. Brinkley, R. R. Fox, R. Hartley, J. Keeling, Edw. Littlewood, S. Oliver, B. Patterson, Philander, J. Phillips, T. Rainsbatt, W. Rebsar, T. Robinson, T. Sealing, Paul Sharp, W. Terril, Jo. Watson, and J. Whitton, dividing each equation respectively by v , x , y , z , the four quotients give each an expression for $v + x + y + z$; which therefore being equated to each other, the values of three of the letters are obtained in terms of the fourth, and which being substituted in one of the original equations, the whole becomes known.—And Mr. Richard Dening and Mr. John Mole solve it thus: Since in the four equations, each letter is multiplied by the same quantity ($v + x + y + z$), these letters are respectively proportional to the given numbers; and as these are to be whole numbers, the given numbers divided by 36 their common measure give the same values as before. Other solutions were given by Messrs. J. Ashburner, J. Bartlett, R. Dowden, H. Furness, J. Gruby, W. Hawkes, W. Marwood, Jo. Peet, A. Rowe, H. Weetman, T. Wilkin, and Geo. Wood.

II. Question 773 answered by the Rev. Mr. Hellins.

IF the $\triangle ABC$ represent the garden, and D the place of the tree; and if C, D be joined, and there be drawn $DE \perp AC$; it is evident from the principles of optics and geometry, that $\angle ACD = \angle DCB$, and $DE = DB$. Now as $\frac{1}{2} AC \times DE + \frac{1}{2} BC \times DB = \text{area of } \triangle ABC$, and AC and $DE (= DB)$ are given, we have only to find BC, and the area will be known.

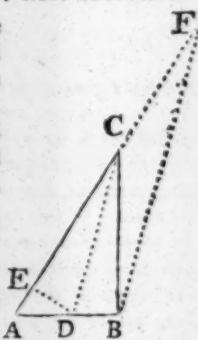
Put $AC = 100 = a$, $BD = 20 = b$, and BC

$= x$: then $AB = \sqrt{aa - xx}$, and the area $=$

$\frac{1}{2} x \sqrt{aa - xx} = \frac{1}{2} b \times a + x$ (by what hath been

premised). This equation being cleared of the surd A

and divided by $a + x$, we get $xx \times a - x = bb \times a + x$, or $x^3 - ax^2 + bbx + abb = 0$, or in numbers $x^3 - 100x^2 + 400x + 20000 = 0$, where the two positive values of x are 90.7326 and 26.1355; and the corresponding areas 1907.326 and 1261.355 square yards, either of which answers the question.—The third root is -16.8681 .



* Who has lately published *A Synopsis of Logarithmical Arith.* Price 2s.

SCHOL. It is evident from what is done above, that, if there be drawn $BF \parallel DC$, meeting AC produced in F , it will be $AF : AE :: BC^2 : BD^2$.

NOTE. This question was inserted by particular desire, on account of a dispute which it occasioned.

Ingenious answers were also given by Messrs. Bartlett, Bowmas, Brinkley, Dalton, Dees, Dowden, Fletcher, Furness, Hartley, Hawkes, Horticultura, Lean, Mole, Oliver, Patterson, Peet, Penn, Phillips, Reynolds, Richardson, Robinson, Rowe, Saul, Scaling, Terril, Watson, Weetman, Wilkin, Whitton, Williams, and Wood.

III. Question 774 answered by Mr. Wm. Richardson, of Backworth.

LET BCO be a vertical section of half the hill, O the vertex, D the object,

and C the center of the circular base.

Then $360 : 342$ or $20 : 19 :: BO : BC$

$:: 1 : .95$, the sine of $\angle BOC$, which therefore is $= 71^\circ 48' 18''$, and its comp.

or $\angle OBC = 18^\circ 11' 42''$; hence $\angle B - \angle D = \angle BOD = 5^\circ 10' 42''$; then $s. \angle O : s. \angle D :: BD = 6 : BO = 14.97305$; lastly, by

Rule 2, pa. 98, of Hutton's Mensuration, the area of the field is $BO^2 \times 3.14159 \&c. \times 19 \div 20 = 669.1045$ sq. chains $= 66$ ac. 3 r 25.672 p.

It was also ingeniously answered by Messrs. Bartlett, Bowmas, Brinkley, Dees, Dowden, Elstob, Fletcher, Hartley, Horticultura, Lean, Mole, J. Phillips, Reynolds, Rowe, Saul, Scaling, Terril, Watson, Weetman, Wilkin, Whitton, and Williams.

IV. Question 775 answered by the Proposer, Mr. Joel Lean.

LET E, D, C be the three stations, AF one Side of the outer octagon, and FG, \perp BGCE, half of another, $AB \perp BE$. Put $CE = 120 = a$, $CD = 20 = b$, $AB = BC = z$, and $x = \text{tang. } \angle E$: then (by Emer. Trig.

b. 1, prop. 33, cor. 1.) $\frac{3x - x^3}{1 - 3x^2} = \text{tang. } \angle D$. But

by trigon. $1 : x :: a + z : z$, and $1 : \text{tang. } \angle D :: b + z : z$; from the first equation $z = \frac{ax}{1 - x}$ = (from the

and) $\frac{3bx - bx^3}{1 - 3x^2 + x^3}$, which equation in num-

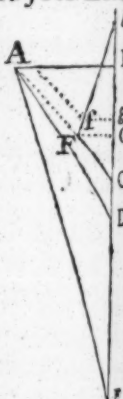
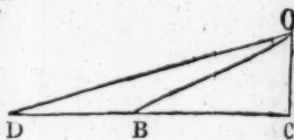
bers gives $x^3 - 3.4x^2 - 3x + .6 = 0$, the root of which is $x = .16917$; and hence $z = 24.4339 = BC = Gb$, if b is the center of the octagon.—Then, in the $\triangle bfg$ are given $bg = 22.4339$, and all the angles, viz.

$\angle f = 45^\circ$, and $\angle b = 22^\circ 30'$; hence $16 \times \triangle bfg = 8 \times bg^2 \times \sqrt{2 + 1} \times 2 - \sqrt{2} \div 2 + \sqrt{2} = 8bg^2 \times \sqrt{2 + 1} \times \sqrt{2 - 1}$

$= 8 \times b^2 \times \sqrt{2 - 1} = 3.3137085 b^2 = 1667.724$, the area of

the floor within the walls.

It was also answered by Messrs. Bartlett, Brinkley, Dees, Dowden, Fletcher, Horticultura, Mole, J. Phillips, Reynolds, Richardson, Robinson,



Rowe, Saul, Scaling, Sharp, Terril, Watson, Weetman, Whitton, Williams, and Wood.

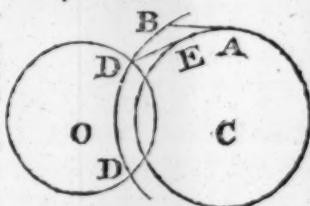
V. Question 776 answered by Horticultura.

IT is demonstrated, (Simson's Conics, cor. to pr. 29. lib. v. or Emerson's Conics, cor. 3. to prop. 65.) that the rectangle under the segments of the line drawn through, and made at the focus of an (elliptic or) hyperbola, is equal to the rectangle under the whole line and $\frac{1}{4}$ the latus-rectum of the axis. Consequently the constant quantity in question is $= \frac{1}{4}$ the said latus-rectum.

In this manner it was also answered by Amicus. And other demonstrations were given by Messrs. Fletcher, Hartley, Rowe, White, and the proposer, Mr. Turner.

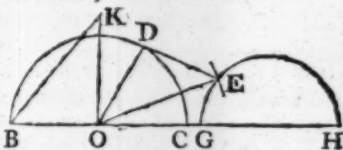
VI. Question 777 answered by Amicus.

TO any point A of the circle, let a tangent AB of the given length be drawn, and with CB radius describe a circle cutting the other given one in D, then drawing the tangent DE to the former given one, E will be the point required. For DE is evidently equal BA; and when the circle BD neither cuts nor touches DD, it is manifest that the problem is impossible.



The same by Mr. John Fletcher, of Chester.

BH being the line passing through the centers of the two given circles, on O the center of one of them erect OK \perp BH and $=$ the given tangent; and with the center O and radius BK cut the other circle in E, the point required.



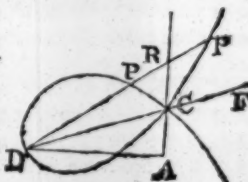
For, drawing the tangent ED, and OD, then $BO = OD$, $BK = OE$, and $\angle O = \angle D$, a right angle, $\therefore DE = OK$, the given line.

LIMIT. It is evident, that the given line cannot be greater than the tangent drawn from H, nor less than the tangent from G, which are the greatest and least tangents; that is, it must not be greater than a mean proportional between HC and HB, nor less than a mean proportional between GC and GB.

This question was also constructed by Messrs. Bowens, Brinkley, Clarke, Hartley, Horticultura, Latbam, Lean, Littlewood, Parnel, Reynolds, Saul, Watson, and White. And algebraically answered by Messrs. Dees, Richardson, Rowe, and Terril.

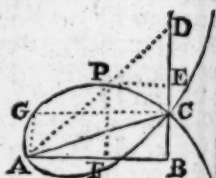
VII Question 778 answered by Amicus.

SUPPOSE DAC to be the given triangle, and DPp a position of the revolving line; then the figure corresponds with fig. 38, tab. V. of Maclaurin's Geomet. Organica, where the curve proved at pa. 36 to be Sir Isaac Newton's 34th species; and when CF is taken $=$ CD, its asymptote passes through F and \parallel AC.



The same by Mr. Nathan Parnel.

LET ABC be the triangle, AD the revolving line, and P the point. Then put $a = AB$, $b = BC$, $x = PE$, and $y = CE$; and we shall have $a - x = AF$, $b + y = FP = BE$; also, by sim. Δs , $a - x : b + y :: x : b + y \times x \div a - x = DE$; and, by 47 Eucl. I. $x^2 + b + y^2 \times x^2 \div a - x^2 = PD^2 = DC^2 =$

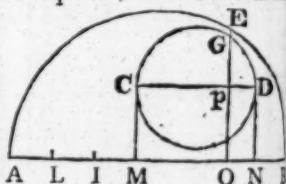


$y + b + y \times x \div a - x^2$ by the question; this equation, reduced, becomes $ax^2 - x^3 = ay^2 + xy^2 + 2bxy$, the equation expressing the nature of the curve.—When $y = 0$, $x = 0$ or $= a$; which shews that the curve passes through the angular point G of the \square AGCB. And when $y = -b$, $x = a$ or $= b$; which also shews the curve passes through the angular point A, and likewise decussates the base AB at the distance of BC from the right angle.

Other ingenious solutions were given by Messrs. *Bownas, Cole, Den Dowden, Fletcher, Hartley, Horticultura, Richardson, Saul, Terril, Watson, and White.*

VIII. Quest. 779 answered by the Proposer, Mr. N. Parnel.

CONSTRUCT. Draw the diameters AB and CD, of the given circles AEB and CGD, in a direction perpendicular to the line given in position, also CM and DN parallel to the same line or \perp AB, and in AB take $AI : IB :: R : S$ in the given ratio, also take $AL : AI :: AI : IB$ the same ratio, or $AL \times IB = AI^2$; lastly, \perp to AB draw EGPO (by prob. 7, book 2, Wales's Determ. Sect.) cutting AB in O, so that $AO \times OB : MO \times ON :: IB : AL$; so shall $EO : GP :: S : R$, as required.

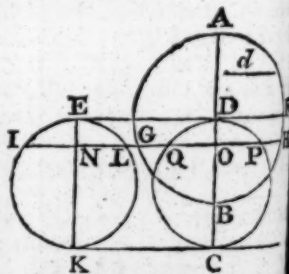


DEMON. By constr. $MO = CP$, and $ON = PD$, \therefore by prop. of circle $AO \times OB = EO^2$, and $MO \times ON = PG^2$; whence by constr. $EO^2 : GP^2 :: IB : AL :: IB^2 : AL \times IB = AI^2$, or $EO : GP :: IB : AI :: S : R$.

NOTE. The construction would be performed nearly in the same manner, let the positions of the circles be what they may.

The same by Mr. John Hampshire.

CONSTRUCT. Let d be the line given by position, R to S the given ratio, and AGBH, EIKL the two given circles; to the lesser of which parallel to d draw the indefinite tangents EF and KC, and \perp to EF or KC the diameters ADB and ENK, to cut the tangents in D, C and E, K. Then (by prob. 4 of Lawson's, or prob. 7 of Wales's Determ. Sec.) cut AB (produced if necessary) in O, so that $OA \times OB : OC \times OD :: R^2 : S^2$; through O and \parallel to d draw ILCOH, the line required.

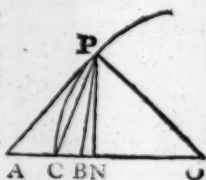


DEMONS. On the diameter DC describe the circle DPCQ to touch the tangents EF and KC in D and C. Then, by parallel lines, $CD = KE$, $CO = KN$, and $DO = EN$, conseq. $PQ = IL$. But, by constr. and the property of the circle, $OA \times OB = OH^2 = OC \times OD = OP^2 = IN^2 :: R^2 : S^2$, or $GH : IL :: R : S$.

Geometrical solutions from first principles were given by *Amicus*, Mr. *H. Clarke*, and Mr. *G. Sanderfon*; also other constructions by Mr. *John Fletcher*, and Mr. *Edm. Littlewood*. And algebraical solutions by Messrs. *Bownas*, *Brinkley*, *Dees*, *Horticultura*, *Lean*, *Ja. Philips*, *Reynolds*, *Richardson*, *Robinson*, *Rowe*, *Saul*, *Terril*, *Watson*, *White*, and *Williams*.

IX. Question 780 answered by Amicus.

Let *FP* be the port sailed from, *PN* its meridian, *PC* a small part of the N. N. E. rhumb, $NO \perp PN$, *O* the center of a circle passing through *P* and *C*, and $PN = \text{unity}$; then $PO = CO = \sqrt{2}$, and $CN = \sqrt{2} - 1$; and, by the lemma at pa. 336 Simpson's Algebra, if there be taken $AC : CO :: AC - BC$



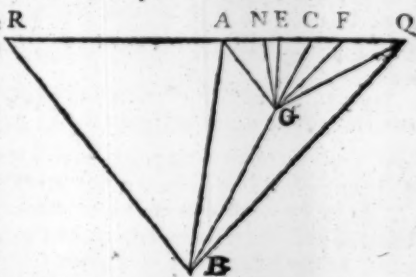
$BC :: AP - PB : PB :: (\text{by the question}) 2 : 7$, then *PA* and *PB* will be the courses of the ships, $AC = \frac{2}{7}\sqrt{2} = .4040610$, $CB = \frac{2}{7}\sqrt{2} = .3142697$, $AB = .7183307$, $AN = .8182746 = \text{tangent of } 39^\circ 17' \text{ one course}$, $AP = 1.2921118$, $BN = .0999439 = \text{the tangent of } 5^\circ 42' \text{ the other course}$, $PB = \frac{2}{7}AP = 1.0049806$. And since the whole rhumbs are proportional to their parts *PA*, *PB*, and the distance of the ports may without sensible error be taken along the parallel of latitude that passes through them, we have $3.0154293 = AP + PB + AB : 656 (\text{per quest.}) :: AP : 281.0977 = \text{the dist. run on the course } PA :: BP : 218.63 = \text{its dist. run} :: AB : 156.2708 = \text{the dist. of the ports arrived at} :: PN : \text{the diff. of lat.} = 217.5478 \text{ miles.}$

Nearly in the same manner is the constr. by Messrs. *Dees* and *Richardson*.

The same by Mr. John Brinkley, of Harleston.

UPON an east-and-west line *R*

RQ take $AQ = 656$, the sum of the three sides of the triangle formed by the three ports, which divide in *C* in the given ratio, namely $7 : 9 :: AC : CQ$, and draw *CB* the N. N. E. rhumb; so take $CR : CQ :: CA : CQ - CA$, and with center *R* and radius *RC* cut *CB*; draw *GQ* to meet the $\angle Q$; then draw *GF*



BQ, and $GE \parallel BA$; so shall *G*, *E*, *F* be the three ports. For since $AB : BQ :: AC : CQ :: 7 : 9$, by lem. p. 336 Simp. Alg. $\angle B$ is bisected by *BC*, and ABQ is similar to the triangle formed by the three ports. Because $GF \parallel BQ$, $\therefore \angle FGQ = \angle GQB = \angle FQG$, $GF = FQ$. And because *QG* bisects $\angle Q$, $\therefore BG : GC :: BQ : CQ :: (\text{by constr.}) BA : AC$, $\therefore AG$ bisects the $\angle A$; and for the like

reason that $FG = FQ$, is $EA = EG$. Consequently $EG + EF + GF = AQ$ the given sum, and EGF is sim. to ABQ .

CALCUL. In the $\triangle BQR$ are known RB , RQ , and the $\angle R$ ($= 2$ compl. $\angle C$), whence is found $\angle Q = 50^\circ 42'$, and from thence the $\angle QAB = 95^\circ 42'$, and $QBA = 33^\circ 36'$. Also in the $\triangle CQB$ are known CQ and the angles, hence CG will become known, and from thence $FG = 281.068$, $EG = 218.608$, and $EF = 156.324$; all the dif. of lat. $GN = 217.502$ miles; therefore the lat. failed to was $51^\circ 53' N$. and the courſe of both ſhips was from the N . towards the E . that of the one $5^\circ 42'$, and the other $39^\circ 18'$.

Geometrical ſolutions were alſo given by Meſſrs. *Clarke*, *Fletcher*, *Horticultura*, and *Sanderſon*, and algebraical ſolutions by Meſſrs. *Bowman*, *Hartley*, *Lean*, *Mole*, *Ja. Phillips*, *Robiſon*, *Rowe*, *Saul*, *Sharpe*, *Terril*, *Watſon*, *White*, and *Williams*.

X. Queſtion 781 answered by Amicus.

PRODUCE the given diameter BD to N till $DN : DO$ in the given ratio, and from the given point A take $AM : AO :: ON : OD$, then by *Simpſon's Geom. V. 18*, take $OE : OD :: ON : ME$, and E is the point required.



For ſince $OE : OD :: ON : ME ::$ (by ſim. $\triangle s$) $OF = OD : OG$ therefore $ON : OD :: ME = AE - AM : OG = AG - AO$; but by conſtr. $AM : AO :: ON : OD$, conſequently $ON : OD :: AE : AG$ or by diviſion $DN : DO :: GE : GA$.

Mr. *Na. Parnel* and Mr. *Geo. Sanderſon* alſo both conſtruct this problem by the ſame 18. V. of *Simpſon's Geometry*.

The ſame by Mr. *Thomas White*, of *Alnwick*.

C being the center, and $m : n$ the given ratio, biſect AC in H , and take $HI : HC :: m : m + n$ and $CK^2 : CD^2$, erecting $CK \perp CD$; make $IG = IK$, erect the $\perp GF$, and draw the tang. FE meeting BD in E , the point required.



DEMONS. For $m + n : m :: CD^2 : CK^2$ by conſtr. But $CD^2 = CF^2 = CG \times CE$ (Eucl. VI. 8), and $CK^2 = IK^2 - IC^2$ (I. 47) $= IG^2 - IC^2$ (conſtr.) $= CG^2 + CG \times 2CI$ (II. 4). Therefore $m + n : m :: (CG \times CE : CG^2 + CG \times 2CI ::) CE : CG + 2CI$ (VI. 1).

Again, by conſtr. $m + n : m :: HC : HI :: (2HC \text{ or } AC : 2HI)$ (V. 15).

Therefore (V. 12) $m + n : m :: (CE + CA \text{ or } AE : (CG + 2HI + 2HI = CG + 2CH = CG + CA =) AG$, and $n : m :: GE : GA$ (V. 17).

SCHOL. Hence the leaſt triangle and cone may be geometrically deſcribed about a circle and a ſphere, or any ſegment of them; A being the center of the baſe of the ſegment, F the point of contact, and E the vertex of the triangle or cone; alſo in the triangle and circle $AG = GE$ but in the cone and ſphere $AG = \frac{1}{2}GE$. See the Scholia, pa. 201 and 209 *Simpſon's Geom.*

Other conſtructions were given by Mr. *Clarke*, Mr. *Fletcher* and Mr.

Hartley. And algebraical solutions by Messrs. *Bownat, Brinkley, Dees, Dodson, Horticultura, Lean, Ja. Phillips, Reynolds, Richardson, Robinson, Rozve, Saul, Sbarp, Terril, Watson, Whitton, and Williams.*

XI. Quest. 782 answ. by Mr. Rob. Hartley, of Daresbury.

It is evident that $\frac{3}{4} \text{ fl. } \frac{1}{1-x} - \frac{1}{2} \dot{x} + \frac{1}{1-x} - \frac{1}{2} x \dot{x} - \dot{x}$ is =
 $\frac{3}{4} \text{ fl. } \frac{\dot{x}}{1-x} - \dot{x}$ (See pa. 116 of Clarke's Inf. Series) = $\frac{3}{4} \times$

$\frac{2}{\sqrt{1-x}} - x - 2$; therefore the whole given expression becomes

$\frac{1}{3x^2\sqrt{x}} \text{ fl. } \dot{x} \times \text{fl. } \frac{x^{-\frac{1}{2}}\dot{x}}{\sqrt{1-x}} - \frac{1}{2} x^{\frac{1}{2}}\dot{x} - x^{-\frac{1}{2}}\dot{x} =$ (by pa. 16 of

the same book) $\frac{1}{2} x^{-\frac{3}{2}} \text{ fl. } \frac{x^{-\frac{1}{2}}\dot{x}}{\sqrt{1-x}} - \frac{1}{2} x^{\frac{1}{2}}\dot{x} - x^{-\frac{1}{2}}\dot{x} - \frac{1}{2} x^{-\frac{5}{2}}$

$\text{fl. } \frac{x^{\frac{1}{2}}\dot{x}}{\sqrt{1-x}} - \frac{1}{2} x^{\frac{3}{2}}\dot{x} - x^{\frac{1}{2}}\dot{x} = ax^{-\frac{3}{2}} - \frac{1}{6} - x^{-1} - \frac{1}{2} ax^{-\frac{5}{2}}$

$+ \frac{1}{2} x^{-2} \sqrt{1-x} + \frac{1}{10} + \frac{1}{3} x^{-1} = \frac{2x-1}{2x^2\sqrt{x}} a + \frac{\sqrt{1-x}}{2x^2} - \frac{2}{3x} - \frac{1}{15}$, where a is the circ. arc, rad. 1, sine \sqrt{x} . And when $x = \frac{1}{2}$, the first term is = 0, and the others become $\sqrt{2} - \frac{7}{5}$, the quantity sought.

The same by Amicus.

THE last correct fluent of the given expression, as above, is =

$\frac{3}{4} \times : \frac{2}{\sqrt{1-x}} - x - 2$, hence that of $\frac{3}{4} \cdot \frac{\dot{x}}{\sqrt{x}} \times \frac{3}{4} \times : \frac{2}{\sqrt{1-x}} - x - 2$, or of $\frac{\dot{x}}{\sqrt{x-xx}} - \frac{1}{2} \dot{x} \sqrt{x} - \frac{\dot{x}}{\sqrt{x}}$ is $v - \frac{1}{3} x \sqrt{x} - 2 \sqrt{x}$

(\dot{x} being = $\dot{x} \cdot \sqrt{\frac{x}{1-x}}$); hence the flu. of $v \dot{x} - \frac{1}{3} x \dot{x} \sqrt{x} -$

$2 \dot{x} \sqrt{x} = vx - \text{fl. } v \dot{x} - \frac{4}{3} x \sqrt{x} - \frac{2}{15} x^2 \sqrt{x} = vx - \text{fl. } \frac{x^{-\frac{1}{2}} + \frac{1}{2} \dot{x}}{\sqrt{x-xx}}$

$- \frac{4}{3} x \sqrt{x} - \frac{2}{15} x^2 \sqrt{x} = x - \frac{1}{2} \cdot v + \sqrt{x-xx} - \frac{2}{15} x \sqrt{x} \times$

$10 + x =$ (when $x = \frac{1}{2}$) $\frac{1}{2} - \frac{1}{15} \sqrt{\frac{1}{2}} \times 10 \frac{1}{2}$; which being multi-

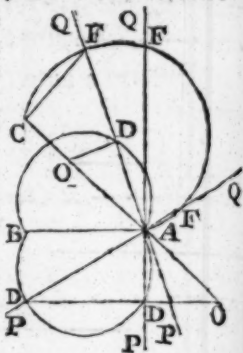
plied by $\frac{1}{2} x^{-\frac{5}{2}}$ or $2\sqrt{2}$, it becomes $\sqrt{2} - \frac{7}{5}$.

Ingenious answers were also given by the proposer, Mr. *Clarke*, and by Mr. *John Fleischer*.

XII. Question 783 answered by Mr. Geo. Sanderson.

DRAW BA, CA, on which describe the segments ABD, ACF to contain the given angles; on CA, or CA produced as the case requires, take AO such, that $AO \times AC = MN^2$; draw OD to make the $\angle AOD =$ the angle which CF is to make with PQ, and meeting the circle BDA in D; through A, D draw PQ cutting the other circle in F, and the thing is done.

For the Δ s ACF, ADO, having $\angle O = \angle F$, and angles at A equal or common, are similar; whence $AD : AO :: AC : AF$, and $AD \times AF = AO \times AC = MN^2$, as required.



The same by Mr. Rob. Bownas, of Bramley near Leeds.

CONSTRUCTION. Draw AB, AC, on which describe the segments ABD, ACF to contain the given angles. Draw either of the diameters AE, on which continued take AG such, that $EA \times AG = MN^2$; make $GF \perp GE$, and through its intersection F with the other circle draw the required line PAQ.

DEMONS. When DE is drawn, the Δ s ADE, AGF will be similar; $\therefore DA \cdot AF = EA \cdot AG = MN^2$.

NOTE. It is evident, that when GF touches the circle, the rectangle is the greatest. And that when it meets it not, the prob. is impossible.

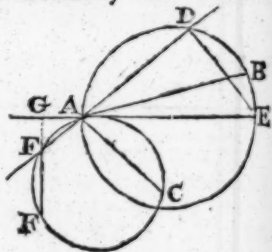
It was also constructed by Messrs. *Amicus, Brinkley, Fletcher, Hartley, Moss, Parnel, and Saul*. And neat algebraical solutions by Messrs. *Dees, Horticultura, Reynolds, Rowe, and Terril*.

XIII. Quest. 784 answ. by Mr. Rob. Phillips, of St. Agnes.

PUT the earth's radius CE or CB = 4000 miles

$= 21120000$ feet $= a$, $32 \frac{1}{6}$ feet $=$ the force of gravity $= s$, the distance CF of the body from the center at the end of any time (t) $= x$, and the velocity at F $= v$. Then, by the laws of attraction, $a : s :: x : x a^{-1}$ $=$ the force at F, and by the principles of motion $v \dot{v} = - s x \dot{x} a^{-1}$, and taking the fluents $v^2 = - s x^2 a^{-1}$; but when $v = 0$, $x = a$, therefore the correct fluent is $v^2 = s a^{-1} \times a^2 - x^2$, and hence $v = \sqrt{s a^{-1}} \times \sqrt{a^2 - x^2} = \sqrt{s a^{-1}} \times FG$, the velocity of the ball at F. And when $x = 0$, this becomes $\sqrt{s a} = \sqrt{s \times AC}$ the greatest velocity, or that at the center C, which is $= 26064 \frac{1}{2}$ feet per second.

Again, the fluxion of the time, or \dot{t} is $= - \dot{x} v^{-1} = \sqrt{a s^{-1}} \times - \dot{x} \times a^2 - x^2)^{-\frac{1}{2}}$, and the correct fluent gives $t = \sqrt{a s^{-1}} \times \text{circ}$.



arc whose radius is 1 and cosine $\pi a^{-1} = \overline{as}^{-1} \times \text{arc, rad. } a \text{ and cos.}$

$x = \frac{EG}{\sqrt{s \times AC}}$ = the time of describing EF. And when the ball


arrives at C, this becomes $t = \frac{EB}{\sqrt{s \times CB}} = \frac{EB}{CB} \times \sqrt{\frac{CB}{s}} = \frac{EB}{CB} \sqrt{\frac{a}{s}}$

$= 2 \times .78539 \text{ \&c. } \sqrt{as^{-1}} = 127.282 \text{ seconds} = 21 \text{ m. } 12.82 \text{ s. the time of falling to the center.}$

COROL. Since any active force, acting in contrary directions, always generates or destroys an equal quantity of motion in the same time, it is evident that after the body passes the center, its velocity at all equal distances on either side will be equal; and when it arrives at the opposite surface, its velocity will be quite destroyed, and the body will again fall towards the center, and proceed till it arrives at the surface again; and thus it will oscillate forward and backward continually; and the whole time of a double oscillation, or of quitting E till it arrive at E again, will be quadruple the time above found for passing over the radius EC, and will therefore be $2 \times 3.14159 \text{ \&c. } \sqrt{as^{-1}} = 1 \text{ h. } 24 \text{ m. } 51.28 \text{ s.}$

Other answers were given by Messrs. Fletcher, Horticultura, Labam, Lean, Littlewood, Ja. Phillips, Reynolds, Terricola, Terril, and Todd.

XIV. Question 785 answered by Mr. Geo. Sanderfon.

LEMMA. If the point A in  the right line GE be given, and it be required to find the points O and I, in GA and GE respectively, such that GA : AE

:: GO : EI; I say the solid $OI \times GO^2$ will be the greatest possible, when $GO = 2AO$. For GE : GA :: OI : OA :: $OI \times GO^2 : OA \times GO^2$, therefore when $OI \times GO^2$ is a max. $OA \times GO^2$ is so too, which by theor. 17 Simp. on the Max. and Min. is when $GO = 2OA$.

CONSTRUC. On GA the given sum of the differences, and AE the given perimeter, take Gk and AK each $= \frac{1}{3}GA$, also take EF $= \frac{1}{3}AE$; on the diameter KF describe a semicircle, to which apply AD = Ak (AG - AK) which continue to B, and from the center C draw CB; so is ACB the triangle required.

DEM. Take $GO = 2Gk$ (2AK), and $EI = 2EF$, draw CD, and the \perp CP. Then AD (AG - AK) is manifestly = AP - PB (DP), and AF = AC + CB, KA = AC - CB, and (by Eucl. Cor. III. 36, and VI. 14) AK (Gk) : AB :: AG : AE :: Gk : FE by constr. $\therefore AB = EF$, and AC + CB (AF) + AB = AE the given perimeter. Also the $\triangle ACB$ is a max. for 2 AB (EI) is to 2 AK (GO) in the given ratio of AE to AG, therefore when $\frac{1}{2}AB \times CP$ or the area of the $\triangle ACB$ is a max. AK \times PC must be so likewise, and consequently 2 AK (GO) \times 2 CP and $GO^2 \times 4CP^2$ are so; but $4CP^2 = 4CD^2 - 4DP^2 = FK^2 - DB^2 = FK + DB \times FK - DB$, $\therefore GO^2 \times FK - DB$ is a max. because FK + DB = AE - AG, a given quantity, but FK - DB = AF - AB + AD - AK = 0, and by the lemma $GO^2 \times OI$ is a max. when $GO = \frac{2}{3}AG$, \therefore the $\triangle ACB$ is a maximum.

In the very same manner is the solution given by the proposer, Amicus,

who farther remarks, that in this triangle are given the sums of each side, and its adjacent segment of the base, which is the 743d Diary question.

The same by Mr. Nathan Parnel, of Nuneaton.

IF ABC be the triangle required, and ED the \perp ; then if $AB + BC + AC = AB + BC + AD + DC$, and $AB + BC - AD - DC$ be given, the half sum and half difference of these two quantities are also given, that is, $AB + BC$, and AC are given, in which case (by Simp. Geom. p. 198, theor. 5.) the Δ will be an isosceles one when a max.

and in this case I have omitted the construction, it being so well known.— But if $AB + AD - BC - DC$ be given, instead of $AB + BC - AD - DC$, the construction will be as follows. Make $EG = GF = \frac{1}{2}$ the

given perimeter; $GD = \frac{1}{2}$ the given E



sum of the two diff. of the sides, and of the segments of the base; and $BD \perp EF$, and of such a length that $BD^2 = \frac{1}{3} ED \times DF$; then draw EB , BF ; as also BA , BC making the $\angle ABE = \angle E$, and $\angle CBF = \angle F$; and ABC will be the triangle required.—For by reason of the equal angles, we have $AB = AE$, and $CB = CF$; consequently $AB + AD = ED$, and $BC + CD = DF$; $\therefore AB + BC + AC = AB + BC + AD + DC = ED + DF$, the given perimeter; and $AB + AD - BC - DC = ED - DF = 2DG$, the given sum; and (47 Euc. I. &c.) $AB - AD = BD^2 \div DE$, and $BC - DC = BD^2 \div DF$; and consequently $2 AD = ED - BD^2 \div DE$, and $2 DC = DF - BD^2 \div DF$; and because the ΔABC is a max. $2 AC \times BD = 2 AD + 2 DC \times BD = ED + DF - BD^2 \div ED - BD^2 \div DF \times BD =$

$ED \times DF - BD^2 \times BD \times ED + DF \div ED \times DF$ is a max. and

since ED and DF are given, $ED \times DF - ED^2 \times BD$ is evidently a max. \therefore (by Simp. Geom. pa. 208, theor. 18,) $ED \times DF - BD^2 = 2 BD^2$, or $BD^2 = \frac{1}{3} ED \times DF$, as by constr.

NOTE. The above contains a solution to the 743d Diary question.

Const. were also given by Messrs. *Brinkley*, *Clarke*, and *Horticulture*. And algebraic solutions by Messrs. *Dees*, *Fletcher*, *Latham*, *Lean*, *Patterson*, *Ja. Phillips*, *Reynolds*, *Robinson*, *Rozve*, *Saul*, *Terril*, *White*, *Whitton*, and *W. Williams*; from whence it appears that the sides of the triangle are in arithmetical progression.

XV. Question 786 answered by Amicus.

IF OS be the axis of a cylinder, the radius of whose base O is $= r$, it is proved by writers on this subject, that when it is suspended at one end O , the distances CO and CG from the center of oscillation C to the point of suspension O , and to the center of gravity G , will be respectively

$$\frac{4 OS^2 + 3 r^2}{6 OS} \text{ and } \frac{OS^2 + 3 r^2}{6 OS}. \text{ And when it is suspended}$$

at any other point P , we have $PG : OG = \frac{1}{2} OS :$

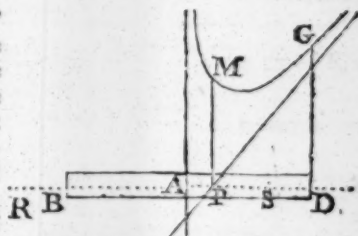
$$\frac{OS^2 + 3 r^2}{6 OS} : \frac{OS^2 + 3 r^2}{12 PG} = GC, \text{ the distance of the cen-}$$



ters of gravity and oscillation when it is suspended at P; and erecting GL ⊥ OS so that $12 GL^2 = OS^2 + 3r^2$, and with the center in OS through the points P and L describing a semicircle, its diameter PC = PG + GL² ÷ PG will be the length of an isochronous pendulum, and will evidently be a minimum when GL = GP = GC = the radius of the circle.

The same by Plus Minus, the Proposer.

LET BD be the given cylinder, P the given point of suspension in the axis BD. Bisect BD in A; produce it also to R, which suppose to be the center of oscillation when P is the point of suspension; then will P be the center of oscillation if R be the point of suspension. And if you call BD, a ; RB, x ; BR, z ; and the radius of the cylinder's base r ; you will have, by p. 238 Emerson's fluxions, PR

$$= \frac{12z^2 + 12az + 4a^2 + 3r^2}{12z + 6a} = x + \frac{1}{2}a + z (= AP + AB +$$


BR), consequently $z = \frac{a^2 + 3r^2 - 6ax}{12x}$; and $z + x + \frac{1}{2}a$ (PR) = $x + \frac{1}{2}a + \frac{a^2 + 3r^2 - 6ax}{12x} = \frac{12x^2 + a^2 + 3r^2}{12x} = y$ (PM). Or $12xy - 12x^2 - a^2 - 3r^2 = 0$.

The hyperbola, which is the locus of this equation, is constructed by drawing two indef. right lines through A, one ⊥ AD, the other at an ∠ of 45°, for asymptotes; and then drawing DG ⊥ AD cutting one asymptote, and $= \frac{2}{3}a + \frac{1}{2}r^2a^{-1}$; then thro' G descr. the opposite sections.

Every ordinate of these hyperbolas is the length of a pendulum, whose vibrations are isochronous to the vibrations of the cylinder, when the point, which is the foot of that ordinate, is its point of suspension. The above equation of the hyperbola being reduced, gives $x = \frac{1}{2}y \pm$

$\frac{1}{2}\sqrt{y^2 - r^2 - \frac{1}{2}a^2}$, and the ordinate (y) being a minimum when the two values of the abscissa become equal, in that case we shall have $x = \frac{1}{2}y$, and $\sqrt{y^2 - r^2 - \frac{1}{2}a^2} = 0$, or $y = \pm\sqrt{r^2 + \frac{1}{2}a^2}$, and consequently $x = \pm\frac{1}{2}\sqrt{r^2 + \frac{1}{2}a^2}$. If then you take AS = this value of x, S will be the point of suspension when the vibrations of the cylinder are made in the shortest time. And in this case the point of suspension and center of oscillation are equidistant from A, the middle of the axis.

Solu. were given by Messrs. Fletcher, Hartley, Horticultura, and Terri.

XVI. (or Pr.) Quest. 787 ans. b P. Puzzle, the Proposer.

LET b be the angular velocity of the parabola about its axis, measured at the distance r therefrom; v the velocity of the projectile from, and v the velocity parallel to the axis; f the force towards, and b the force parallel to the same axis; and g the force at right angles to the plane of the parabola.

Then, by LANDEN's IXth Mathemat. Memoir, f will be =

$$\frac{b^2 y \dot{y} - r^2 v \dot{v}}{r^2 \dot{y}}, g = \frac{2 b v}{r}, \text{ and } b = \frac{v \dot{v}}{\dot{x}}; \text{ where } v : v :: \dot{y} : \dot{x}.$$

Now, $4rx = y^2$ being the equation of the parabola, $f.x = r + by$, the force at right angles to the ray from the focus, by the quest. must be

$$= 0; \text{ and therefore the force towards the focus, or } \frac{fy + b.r - x}{r + x},$$

will be = $\frac{r - x^2 + y^2}{r^2 - x^2} + b$. Moreover, by substituting properly in

the equation $f.x = r + by = 0$, we get $v \dot{v} + \frac{2v^2 y \dot{y}}{4r^2 + y^2} = \frac{b^2 y \dot{y}}{r^2} \times$

$$\frac{4r^2 - y^2}{4r^2 + y^2}; \text{ whence } v = \frac{b}{r} \times \frac{\sqrt{k + 16r^4 y^2 - \frac{1}{3}y^6}}{4r^2 + y^2}, \text{ where } a \text{ and } c$$

are contemporary values of y and v , and $k = c^2 r^2 b^{-2} \cdot 4r^2 + a^2)^2 - 16r^4 a^2 + \frac{1}{3}a^6$. The value of v being thus found, the value of v ($= \frac{1}{2}vyr^{-1}$) will be known; and consequently the force g and the force towards the focus, of which the required force will be compounded.

Putting w for $4r^2 + y^2 \div 4r$, the focal distance; t , the flux. of the

$$\text{time, will be } = \frac{\sqrt{3 \cdot r w \dot{w}}}{2b\sqrt{w - r} \cdot \sqrt{K + 3rw^2 - w^3}}, K \text{ being } =$$

$\frac{3k}{64r^3} - 2r^3$: the fluent of which fluxion will, in some cases, be assigned by the *area of the conic sections*. See the *Append. to LANDEN's Matb. Memoirs*.

REMARK 1. If k be = 0, the body, either immediately, or some time after it is put in motion, will continually approach nearer and nearer to the vertex of the parabola, yet never can arrive at it!

REMARK 2. If k be positive, the body will pass and repass through the vertical point, and its recess therefrom will be limited by a circle, to whose plane the axis of the parabola will be perpendicular, and whose radius will be the positive root (y) of the equation $y^6 - 48r^4 y^2 - 3k = 0$; which circle will touch the trajectory at each apsis.

REMARK 3. If k be negative, the trajectory will be situated between, and limited by, two circles, to each of whose planes the axis of the parabola will be perpendicular, and the radius of each will be a positive root of the equation $y^6 - 48r^4 y^2 - 3k = 0$; which circles will touch the trajectory, the one at the apsides nearest to the vertex of the parabola, and the other at the apsides most remote from the said vertex.

Ingenuous solutions were also given by *Amicus*, and *Mr. Rob. Phillips*.

The Geom. Paradox, answ. by C. Bumpkin, the Proposer.

THE following very remarkable inference, not adverted to by Sir Isaac Newton, may be deduced from prob. 19 of the 1st Edit. of his Algebra; viz. the solid in the form of an Apothecary's mortar, generated by any conic hyperbola, revolving about its conjugate axis, may also be

By mistake last year, wrong foliations to questions (VIII.) 764, and (XII.) 768, were handed to the Printer, instead of which they should have been as follows, by the same gentleman, Mr. *Henry Clarke*.

XII. Question 768 answered.

ANALYSIS. Suppose ABC to be the required greatest triangle inscribed in the given circle $ABDC$, and having its two sides AB, AC in the given ratio. Draw the diam. AD , its center being E , and $CF \perp AD$; then $\triangle ACF$ is evidently sim. to $\triangle ABC$, and having the side AC common, ACF will be a maximum when AEC is a max. but when a triangle, as ACF is a max. the base and perpendicular are to each other directly as their increments or decrements, namely, $AG : CF :: AG' : CF'$. With center H in AD , suppose a semicircle AFI drawn through A and F , (the diam. AI of which will be given, since $AI : AD :: AF : AB :: AC^2 : AB^2$ in the duplicate of the given ratio) and suppose cf to be indefinitely near to CF , Cd and $Fb \parallel AG$, and $Fn \parallel Cc$; then Cd or Fb is the decrement of AG , and $fn = fb + cd$ is the increment of CF ; $\therefore AG : CF :: Fb : fn ::$ (by drawing the tangents Ca, Fa , forming the $\triangle CaF$ sim. $\triangle nEf$, and drawing $ag \parallel AG$ or $\perp CF$) $ag : CF$; and as the consequents are the same CF , the antecedents AG, ag , are equal. So that the problem is now reduced to this, Dividing AD in

will be when the two tangents aFW, aCV, terminated by VMAW \perp AD, are bisected in the points of contact F, C; &c.

A fluxionary solution to the same.

PUT $AG = x$, $AI = a$, and $AD = d$; then $CF = \sqrt{ax - x^2}$, and $GC = \sqrt{dx - x^2}$; consequently $x\sqrt{ax - x^2} + x\sqrt{dx - x^2}$ = a max. the fluxion of which made = 0 gives $8x^2 = 9x \cdot a + d - 9ad$; subtract each side from $9x^2$, so shall $x^2 = 9 \times x^2 - x \cdot a + d + ad = 9 \cdot a - x \cdot d - x = 9GI$. $GD = 9GK^2$, hence $x = AG = 3GK$, and consequently $AM = 3KL$, as before.

NEW QUESTIONS.

I. QUESTION 788 by Mr. Wm. Swift, of Stow, near Lincoln.

REQUIRED the value of x as below *,
And you will oblige your most humble at Stow.

* By a quadratic, supposing $x^4 - 2x^3 + x = a$.

II. QUESTION 789 by Mr. Paul Sharp, of Biddenden.

IN 56 deg. 19 m. 38 s. north latitude, the sun's amplitude was observed to be 26 deg. 34 m. more than his altitude at 6 o'clock: Required the said amplitude, altitude, and the day when the observation was made.

III. QUESTION 790 by Mr. Tho. Robinson, of Biddick.

GIVEN the diameters of the circles circumscribing and inscribed in a parabola, equal to 10 and 8; to find the parabola.

IV. QUESTION 791 by Master John Brinkley, at Harleston.

FROM a given point A to draw two right lines AB and AC to meet a right line PQ given in position, so that the rectangle under AB and AC may be of a given magnitude, and the angles ABC and ACB have a given difference.

V. QUESTION 792 by Mr. Rob. Phillips, of St. Agnes.

REQUIRED the area of a curve whose equation is $y = x^{\frac{1}{2}} \times \text{hyp. l.}$

$\frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}}$, supposing that when $y = 0$, x is = 0.

VI. QUESTION 793 by Lieut. Glenie, of the Engineers.

IN any rectilinear triangle ABC, if any one (AB) of the sides be assumed, to determine a point P, through which if a right line be drawn parallel to that side, the difference of the parts of this line and the perpendicular distance of P from the assumed side, shall have to each other, the duplicate ratio of the parts themselves.

VII. QUESTION 794 by Mr. Michael Taylor.

TO determine a place on the earth, where a degree of the meridian is equal to a degree of the equator; the ratio of the axis to the equatorial diameter being that of 229 to 230.

VIII. QUESTION 795 by Amicus.

GIVEN the difference of the sides, the line drawn from the vertex to bisect the base, and the ratio of the difference of the segments of the base to the diameter of the circumscribing circle; to construct the triangle.

IX. QUESTION 796 by Nauticus.

HAVING given the right ascension and declination of any fixed star, it is required to determine the greatest and least right ascensions that another star can have, whose declination is given, so that it may be seen on the same vertical circle with the former, in a given latitude.

X. QUESTION 797 by Mr. Alex. Rowe, of Reginnis.

REQUIRED the nature and quadrature of the curve into which a flexible wire 113052 feet long must be bent, so that a ring of heavy metal being put thereon and the wire revolved about an axis at right angles to the horizon, with a given velocity, the said ring shall rest in equilibrio; the abscissa being to the ordinate as 3 to 2.

XI. QUESTION 798 by Mr. Nathan Parnel.

FROM two given right lines it is required to cut off two equal parts so, that the two remainders may be to each other as the squares of the whole lines respectively.

XII. QUESTION 799 by Mr. Rob. Hartley, of Daresbury.

SUPPOSE a field in form of a semi-parabola, whose abscissa is 9 chains, and semi-ordinate 6 chains; and let the land along the ordinate be worth after the rate of 100 pounds an acre, and from thence uniformly to decrease along the abscissa in such a manner, that every equal part of any one semi-ordinate may be of the same value, so as to be worth 60 pounds an acre at the vertex: It is required to divide the said field into two equivalent parts by a line drawn parallel to the abscissa; and to determine the mean price per acre of the whole field.

XIII. QUESTION 800 by Mr. Geo. Sanderfon.

GIVEN the sides AC and CB, and the product of the base AB and cube of the perpendicular CD a maximum; to determine the triangle ACB by an equation not exceeding a quadratic, and to construct the triangle.

XIV. QUESTION 801 by Terricola.

LET A, B, C, D be given points in a vertical line, A the highest, and the rest in succession; and let CE, DF be horizontal lines; then, F being a given point in DF, it is required to find E in CE so that, joining BE, EF, if a heavy body fall freely from A to B, and be then deflected along the plane BE, and thence from E to F along the plane EF, the time of descent to the lowest point F may be the least possible; supposing its motion not to be impeded by striking the planes at B and E.

XV. Or PRIZE QUESTION 802 by Plus Minus.

BY observing the interval of time between two observations, one of two fixed stars on the same azimuth circle, the other of two other fixed stars (or even of the same two stars when that is possible) on the same azimuth circle, the latitude of the place of observation may be determined. It is required to shew how the observer may chuse his star, that the error in the latitude, caused by that which he is liable to commit in judging when the stars are on the same azimuth circle, may be the least possible.

*** The prizes have been determined by lot as follows. First, for the solution of the prize question, to Mr. Peter Puzosien 12, and to Amicus 8 diaries.---2dly, for the solution of the prize enigma, to Mr. Phil. Williams 10, and to Mrs. Rubwell 8 diaries.---3dly, for the general solution of the enigmas, to Miss E. Cooke 10, and to Mr. Rob. Hartley 10 diaries.---4thly, for the solution of the queries, &c. to Mr. John Bayley 8, and to Mr. Wm. Turner 8 diaries. All of whom will please to order them to be called for at Stationers-hall, London.---All Letters for the use of the Diary must be directed thus, "For the Ladies' Diary, Stationers-hall, London."---The gentleman who sent the question concerning the greatest rectangle in a quadrant will please to observe, that it is not a new one, though doubtless he thought it was. We sent a letter to apply to him of it, but it came back to us, the post not being able to find him, which is the reason of the alteration he may observe.---He will please to send us his proper address.

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